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The manufacturing industry's areal and structural growth trends were analyzed for insights into their possible future role in Appalachia's economy. Between 1950 and 1960, total manufacturing employment expanded in large-, medium-, and small-center population areas, in rates inverse to center size. However, absolute gains in employment were concentrated in areas with large- and medium-size urban centers. The growth of industries among areas in the 1950's was essentially in the nationally fast-growing industries for large- and medium-center areas and in the nationally slow-growing industries in small-center areas. It was concluded that: (1) if the trends of the 1950's continue, the growth prospects of large- and medium-center areas in Appalachia appear brighter than those of small-center areas; and (2) the manufacturing industry will have to grow at higher rates in small-center areas to offset existing unemployment and low incomes and to counteract further declines in agriculture and mining. (JAM)

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EMPLOYMENT IN APPALACHIA

TRENDS AND PROSPECTS

RC 002964

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SUMMARY

The economy of Appalachia in the 1950's experienced acute adjustments. Two structurally important basic industries--agriculture and mining--contracted much more rapidly in the region than in the Nation. Manufacturing, trade, services, and other activities expanded, but at less than national rates. The net effect was that growth in total employment and population in Appalachia lagged considerably behind the Nation. High residual proportions of the unemployed and the lower income in 1960 in the region than in the Nation were a byproduct of the lag in growth.

Over the decade, the severe contractions in agriculture and mining employment were borne disproportionately by the less urbanized areas of the region. The large urban areas with minimal dependence on agriculture and mining experienced employment and population growth rates near the national average. Small-center rural areas typically had sizable losses in both total employment and population. In 1960, rates of unemployment and proportions of families with low incomes were much higher in small- than in large-center areas of the region. The relative and perhaps absolute needs of small-center areas for some type of economic adjustment were greater than those of the large center areas.

Manufacturing was the one major basic industry which expanded in the region nearly as rapidly as in the Nation. The industry grew in large-, medium-, and small-center areas. Since the industry prospered in Appalachia in the 1950's and strengthened its position as the dominant basic industry, its areal and structural growth trends are important relative to insights they may provide on the future of the industry in the region.

Between 1950 and 1960, total manufacturing employment expanded in large-, medium-, and small-center areas and at rates inverse to center size. Absolute gains in employment, however, were concentrated in areas with large and medium-size urban centers. At the extremes, areas with centers of 250,000 and over averaged a growth rate of 13.8 percent and gained 142,314 jobs in manufacturing, while areas with centers under 10,000 averaged a growth rate of 44.4 percent and a net gain of 16,318 jobs. Due to the inverse relation of growth rates to the size of area centers, there was some relative decentralization of manufacturing employment in the region, especially from large- to medium-center areas.

Differences occurred in the industry mix of employment growth among areas over the decade. Growth in the large- and medium-center areas was heavily weighted to nationally fast-growing industries such as transportation equipment, electrical machinery, and fabricated metals typically oriented to markets or skilled labor. Growth in the small-center areas was mainly in nationally slow-growing industries such as textiles, apparel, and food

products which are typically dependent on unskilled labor or raw materials. This differential growth pattern of specific industries among large-, medium-, and small-center areas suggests that the large- and medium-center areas had some competitive advantages for nationally fast-growing, market-oriented industries, while the small-center areas were most attractive to nationally slow-growing labor and raw-materials-oriented industries. The growth of industries among areas in the 1950's was essentially in the nationally fast-growing industries for large- and medium-center areas and the nationally slow-growing industries in small-center areas.

If the trends of the 1950's continue, the growth prospects of large- and medium-center areas in Appalachia appear brighter than the prospects of small-center areas. The limited dependence of large- and medium-center areas on agriculture and mining means that they can sustain further declines in these activities with much less adverse effect than the small-center areas still heavily oriented to agriculture and mining. Manufacturing may continue to expand in large-, medium-, and small-center areas. Yet, the industry will have to grow at high rates in small-center areas to offset existing unemployment and low incomes and to counteract further declines in agriculture and mining. The large- and medium-center areas also may have an advantage in manufacturing in that they seem to provide attractive locations for nationally fast-growing industries. The growth of nationally slow-growing industries in small-center areas is encouraging. But the expansion of fast-growing industries must also be facilitated to ease the economic problems of rural portions of Appalachia.

EMPLOYMENT IN APPALACHIA: TRENDS AND PROSPECTS

By

Theodore E. Fuller[1/]

GROWTH--AN APPALACHIAN PROBLEM

Appalachia has relatively large proportions of unemployment and families with low incomes. As recently as 1960 the region had an unemployment rate of 7.1 percent and 30.7 percent of its families received incomes under $3,000. Comparatively, in the rest of the Nation unemployment was 5.1 percent and 20.5 percent of all families had incomes below $3,000 (1).[2/] While the upsurge of the national economy since 1960 has lessened the incidence of unemployment and impoverished families in both Appalachia and the Nation, many parts of the region are still in a less than desirable economic condition.

The current economic plight of Appalachia is due to failure of employment in the region to keep pace with the Nation. Between 1950 and 1960, employment in the region declined 1.5 percent while expanding 17.1 percent in the rest of the Nation (1). Among areas within Appalachia over the decade, changes in total employment ranged from a decrease of 44 percent to an increase of 29 percent, indicating large intraregional variations in economic prosperity (4). These significant differences in rates of change in total employment between Appalachia and the Nation and among areas in the region were due partly to the heavy employment in the region and many of its areas in agriculture and mining. Large employment contractions occurred in agriculture and mining which were but partially offset by expansions in manufacturing, trade, services, and other activities (4).

The fact that agriculture and mining have experienced declining employment in Appalachia poses a serious development problem for the region. Both industries are export oriented, typically selling their products outside the region. In the economy of the 1960's if a region is to grow it must have continuing expansion in sales of goods or services to the "outside world." Growth in exports not only increases regional employment in the exporting industry but also, through generating additional local income, stimulates other activities serving the population of the region. If Appalachia is to

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2/Underscored numbers in parentheses refer to items in the Selected References, p. 41.

provide employment for its existing unemployed and for future entrants to its labor force, it must somehow find export activities to substitute for agriculture and mining.

The export activity with the greatest potential for growth in Appalachia is manufacturing. This diversified activity is already important in much of Appalachia and recently had a near-national growth rate in the region (4). Therefore, knowledge of the role manufacturing may play in the development of urban and rural areas within the region is valuable in policy and program design.

AIMS OF STUDY

This report analyzes data on the manufacturing industry in Appalachia for insights regarding its possible future role in the economy of the region. Objectives of the study include the following:

1. To determine the employment role of manufacturing in the economies of the Nation, Appalachia, and urban and rural areas of the region.

2. To measure the recent changes in amount and location of employment in major manufacturing industries between Appalachia and the Nation and among urban and rural areas of the region.

3. To learn the factors associated with employment changes in various industries among areas of the region.

4. To discover how recent changes in amount and location of employment in major industries have affected the industry composition of the region and its urban and rural areas.

5. To determine the implications of recent changes in the composition, amount, and location of the manufacturing employment in Appalachia for the future growth of the industry within the region.

Of special concern are comparative growth trends of manufacturing in urban versus rural areas of Appalachia and assessment of their respective potentials for industry growth. Any effective development strategy for the region must rest on appraisal of areas within the region which would be likely locations for future growth and profitable sites for public and private investments. There is some question as to whether all rural areas have development potential.

THE REGION

The area delineated for study includes the Appalachian Region as defined by the Appalachian Regional Development Act of 1965 (11). This area embraces 370 contiguous counties located in portions of New York, Pennsylvania, Maryland, Ohio, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, and all of West Virginia. The study includes 78 additional adjacent counties, which are of concern either because they

contain urban centers to which "official" Appalachian counties are tied economically or because they are linked to urban centers within the Appalachia of the 1965 Act.

Areas

To analyze the location of changes in manufacturing industries within Appalachia, the region was divided into 79 areas (fig. 1). The areas consist of two or more contiguous counties centered on urban places or towns of differing size. The areas approximate the labor commuting radius of their centers and are named for their centers. The methodology for delineating the areas is detailed in the appendix, along with a list of the counties in each area and the population of area centers (table 1).3/

Areas with centers under 25,000 are divided into four groups, based on their geographic location and composition of economic activity (appendix and table 2).

Industries

Data from the 1950 and 1960 Censuses of Population were utilized to describe and analyze recent changes in the amount and location of manufacturing employment within Appalachia. The data were grouped into 14 major industries:

Furniture, lumber, and wood products
Primary metal industries
Fabricated metal industries
Machinery, except electrical
Electrical machinery, equipment, & supplies
Motor vehicles and motor vehicle equipment
Transportation equipment, except motor vehicles
Other durable goods
Food and kindred products
Textile mill products
Apparel and other fabricated products
Printing, publishing, and allied products
Chemicals and allied products
Other nondurable goods (and not specified manufacturing)

This industry breakdown of total manufacturing is gross and does not necessarily group industries in homogeneous categories of output or important location factors. However, the set of industries is useful for a broad

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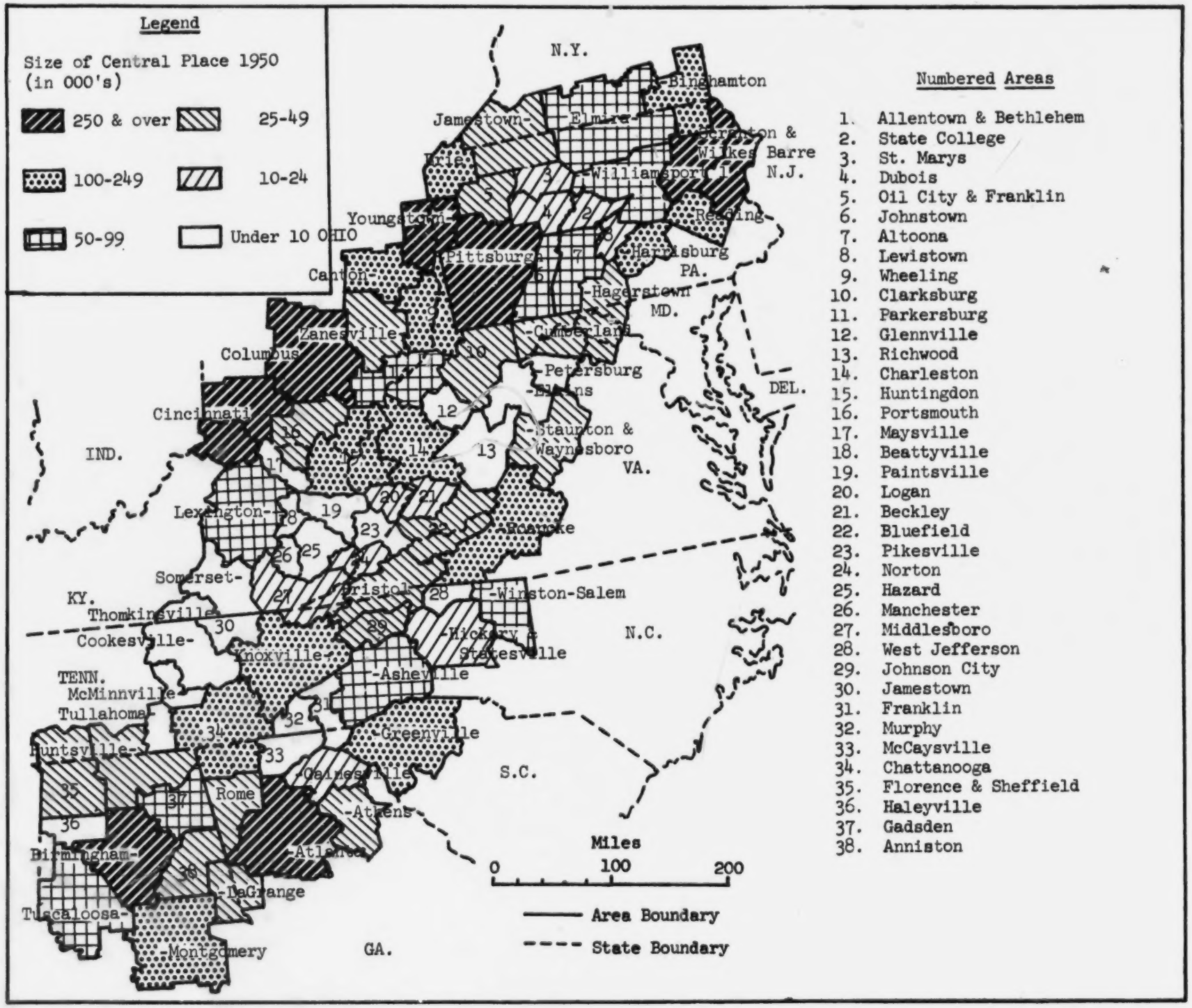
3/The population of the centers of areas is actually the population of the central place cluster, which is defined in the appendix. This definition of the population of a center is used throughout the report. Areas with centers of 100,000 and over are referred to as large-center areas, areas with centers of 25,000-99,999 as medium-center areas, and areas with centers under 25,000 as small-center areas.



Numbered Areas

1. Allentown & Bethlehem
2. State College
3. St. Marys
4. Dubois
5. Oil City & Franklin
6. Johnstown
7. Altoona
8. Lewistown
9. Wheeling
10. Clarksburg
11. Parkersburg
12. Glennville
13. Richwood
14. Charleston
15. Huntingdon
16. Portsmouth
17. Maysville
18. Beattyville
19. Paintsville
20. Logan
21. Beckley
22. Bluefield
23. Pikesville
24. Norton
25. Hazard
26. Manchester
27. Middlesboro
28. West Jefferson
29. Johnson City
30. Jamestown
31. Franklin
32. Murphy
33. McCaysville
34. Chattanooga
35. Florence & Sheffield
36. Haleyville
37. Gadsden
38. Anniston

Figure 1.--Areas of Appalachia.

Table 1.--Number of areas by size of central place delineated for analysis in the Appalachian Region

Population of area centers 1950	Number of areas
250,000 & over.	8
100,000 - 249,999	13
50,000 - 99,999	10
25,000 - 49,999	17
10,000 - 24,999	10
Under 10,000	21
Total	79

Source: Appendix table 22.

Table 2.--Number of areas with centers under 25,000 grouped by geographic location for special analysis in the Appalachian Region

Geographic location	Population of area centers in 1950		
	10,000 - 24,999	Under 10,000	Under 25,000
	Areas		
Northern peripheral. . . .	4	-	4
Central interior	4	9	13
Southeastern peripheral. .	2	4	6
Southwestern peripheral. .	-	8	8
Total.	10	21	31

Source: Appendix table 23.

analysis of changes in the composition and amount of manufacturing activity within Appalachia.

OVERALL ECONOMIC CHANGES

Manufacturing is only one part of the economy of Appalachia. The industry should thus first be viewed against the background of recent trends and conditions in the overall regional economy before being analyzed in detail.

Such a perspective is important since there is great diversity in the economic condition of areas within the region and because the role of manufacturing varies considerably among areas.

From 1950 to 1960, among areas of Appalachia grouped by size of center, there were much greater differences in rates of change in total employment and population than between the region and the Nation. Rates of change in these two indicators of economic growth varied directly with the size of area centers. At the extremes, areas with centers of 250,000 and over had an average increase of 9.5 percent in total employment and 14.0 percent in population, while areas with centers under 10,000 had decreases of 16.8 percent in employment and 12.4 percent in population (table 3).

However, rates of unemployment and proportions of families with incomes under $3,000 in 1960 were inverse to the size of centers. Areas with centers of 250,000 and over averaged 6.0 percent unemployed and 19.3 percent of families with low incomes, while areas with centers under 10,000 had 7.6 percent unemployed and 57.1 percent of all families with incomes under $3,000 (table 3). Numbers of unemployed in excess of 4 percent in 1960 were larger in the large-center areas, but numbers of families with low incomes in excess of the national proportion of 21.4 percent in 1960 were rather equally distributed among areas with large, medium, and small centers (table 3).

The above data on areas grouped by center size suggest that the small-center areas have had the greatest development problems. Unemployment rates and proportions of families with low incomes were higher in small-center areas than in medium- and large-center areas. Absolute numbers of the unemployed (in excess of 4 percent) were greater in medium- and large-center than in small-center areas, implying that needs for new employment opportunities might be less than in small-center areas. However, if numbers of families with low incomes are evidence that there is also extensive underemployment (as well as unemployment) in Appalachia, then the need for expansions in jobs and income could be nearly as great in the small-center areas as in medium- and large-center areas.

Evolving Role of Manufacturing

Recent trends in the overall economy of Appalachia raise the question of what changes in composition of economic activity contributed to the development lag of the region. In particular, what was the evolving role of manufacturing? Did the industry retard or contribute to the growth of total employment in the region from 1950 to 1960?

Looking first at changes in the composition of economic activity in the region versus the Nation, it is evident that Appalachia was adversely affected by substantial declines in agriculture and mining, which contracted more rapidly in the region than in the Nation. Changes in Appalachia were -49.6 percent for agricultural employment and -57.5 percent for mining employment, versus rates of -38.2 and -29.7 percent respectively in the Nation (table 4). In the region 758,693 jobs were lost in agriculture and mining which were only modestly offset by 1,100,680 new jobs in all other activities. Manufacturing contributed 391,072 additional jobs, or slightly over a third of

Table 3.--Economic measures for the United States, Appalachia, and areas of Appalachia by size of center, 1960, and percentage changes, 1950-60

Economic measure	United States	Appalachia	Size of center: 250,000 & over	100,000-249,999	50,000-99,999	25,000-49,999	10,000-24,999	Under 10,000
Percent change in total employment, 1950-60	14.5	4.3	9.5	4.2	4.9	0.1	-7.3	-16.8
Percent change in population, 1950-60	19.3	6.9	14.0	7.2	4.8	2.1	-5.8	-12.4
Percent unemployed, 1960	5.1	6.1	6.0	5.8	5.8	6.4	7.2	7.6
Number unemployed in excess of 4 percent of labor force, 1960	779,195	185,454	73,276	38,519	20,202	28,950	13,477	11,030
Percent of families with incomes under $3,000, 1960	21.4	26.8	19.3	26.2	30.2	32.9	37.6	57.1
Number of families with incomes under $3,000 in excess of national average (21.4 percent), 1960	----	328,996	----	70,622	67,237	100,153	50,429	91,796

Sources: (8, 9, 10).

Table 4.--Changes in employment by major economic activity, unemployment, and population, Appalachia and United States, 1950-60

Activity	Appalachia		United States
	Number	Percent	Percent
Agriculture, forestry, and fisheries	-481,235	-49.6	-38.2
Mining	-277,458	-57.5	-29.7
Manufacturing	391,072	16.6	19.3
Trade, services, and other	558,917	13.8	20.0
Industry not reported	150,691	131.0	209.3
Total employed	341,987	4.3	14.5
Unemployed	152,344	39.3	23.7
Population	1,560,066	6.9	19.0

Sources: (8, 9).

the new employment, directly through its expansion (table 4). The industry expanded 16.6 percent in the region or at nearly the national rate of 19.3 percent.

In 1950 agriculture and mining together comprised 18.3 percent of total employment in Appalachia and 14.2 percent in the Nation. By 1960 the combined percentages were reduced to 8.4 in the region and 7.7 in the Nation (table 5). It is obvious that the reduced dependence of Appalachia on agriculture and mining by 1960 means that if future sharp percentage declines occur in these activities, they cannot affect the region as adversely as in the past.

Manufacturing in both the region and the Nation was relatively more important in 1960 than in 1950. The industry expanded its share of total employment from 29.4 to 32.8 percent in the region, which exceeded its 27.1 percent share in the national economy in 1960 (table 5). The role of the industry was extended in both the regional and national economies.

Over the decade all area groups lost employment in agriculture and mining. The losses were offset by gains in other activities only in the large- and medium-center groups. In areas with centers of 50,000 and over, in spite of declines in agriculture and mining, total employment averaged from 4.2 to

Table 5.--Percentage distribution of total employment among major economic activities in Appalachia and the United States, 1950 and 1960

Activity	Appalachia		United States	
	1950	1960	1950	1960
	Percent			
Agriculture, forestry, and fisheries	12.2	5.9	12.5	6.7
Mining	6.1	2.5	1.7	1.0
Manufacturing	29.4	32.8	26.0	27.1
Trade, services, and other	50.9	55.6	58.3	61.2
Industry not reported	1.4	3.2	1.5	4.0
Total employed	100.0	100.0	100.0	100.0

Sources: (8, 9).

9.5 percent growth (table 6). Areas with centers from 25,000 to 49,999 barely held their own as total employment increased 0.1 percent. In areas with centers under 25,000, the losses in agriculture and mining were so great that total employment fell considerably (table 6).

Manufacturing employment expanded in all area groups, and at rates inverse to the size of centers (table 6). However, the great bulk of the new jobs in manufacturing over the decade accrued to the large- and medium-center areas (fig. 2). In the small-center areas especially, the gains in manufacturing were but a fraction of the losses in agriculture and mining.

The small-center areas fared worst in employment change from 1950 to 1960 because proportions of total employment in agriculture and mining in 1950 were highly inverse to the size of area centers (table 7). Areas with centers of 250,000 and over in 1950 averaged 10 percent of their total employment in agriculture and mining, while areas with centers under 10,000 averaged 53.2 percent of employment in the two activities.

By 1960 all area groups had reduced their employment dependence on agriculture and mining but proportions of total employment in the two activities were still inverse to size of centers (table 7). Areas with centers under 10,000 still averaged over 30 percent of their employment in the two activities. The need to develop additional export activities is likely to remain a problem for the small-center areas.

The importance of manufacturing increased in all area size groups between 1950 and 1960. However, in both years the proportion of total

Table 6.--Changes in employment by major economic activity in areas of Appalachia grouped by size of center, 1950-60

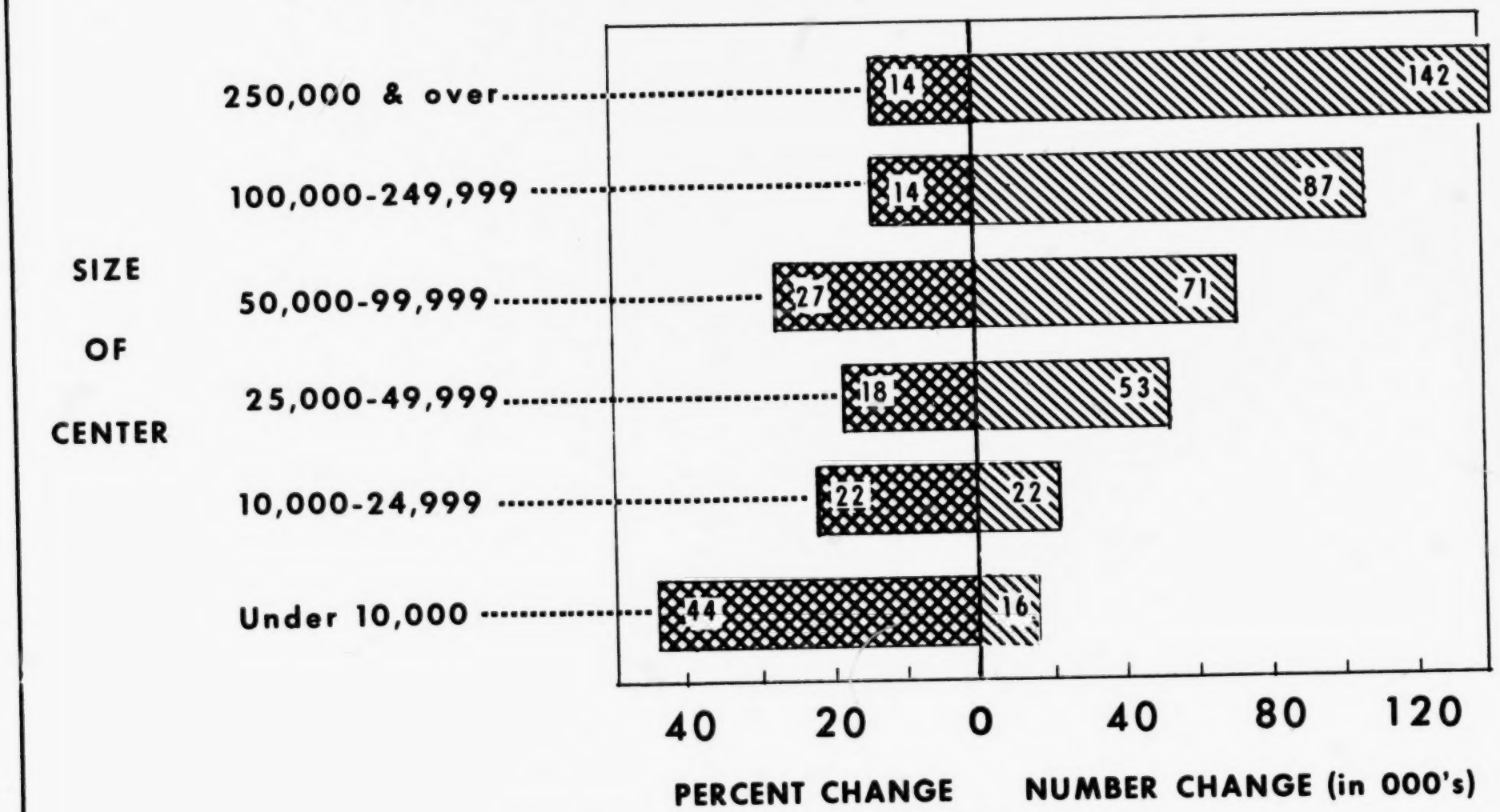
Economic activity	Size of center: 250,000 & over		100,000-249,999		50,000-99,999	
	Number	Percent	Number	Percent	Number	Percent
Agriculture, forestry, and fisheries	-75,515	-45.4	-111,629	-50.7	-82,049	-44.9
Mining	-96,292	-65.5	-48,547	-58.2	-24,626	-61.4
Manufacturing	142,314	13.8	87,113	13.9	70,798	27.3
Trade, services, and other	239,985	13.6	119,219	12.1	71,660	14.4
Industry not reported	87,759	216.8	35,753	133.1	12,595	76.3
Total employed	298,251	9.5	81,909	4.2	48,378	4.9

Economic activity	Size of center: 25,000-49,999		10,000-24,999		Under 10,000	
	Number	Percent	Number	Percent	Number	Percent
Agriculture, forestry, and fisheries	-107,380	-50.5	-32,202	-53.2	-72,460	-56.5
Mining	-36,194	-49.9	-49,452	-57.1	-22,347	-42.1
Manufacturing	52,994	17.8	21,535	22.0	16,318	44.4
Trade, services, and other	81,406	15.4	25,824	15.3	20,823	18.0
Industry not reported	10,658	58.3	3,545	57.3	381	5.7
Total employed	1,484	0.1	-30,750	-7.3	-57,285	-16.8

Sources: (8, 9).

CHANGE IN MANUFACTURING EMPLOYMENT, APPALACHIA, 1950-60

In Areas Grouped by Size of Center



DATA FROM THE U.S. BUREAU OF THE CENSUS.

U.S. DEPARTMENT OF AGRICULTURE NEG. ERS 5537-68 (4) ECONOMIC RESEARCH SERVICE

Figure 2

Table 7.--Percentage distribution of total employment among major economic activities in areas of Appalachia grouped by size of center, 1950 and 1960

Economic activity	Size of center: 250,000 & over		100,000-249,999		50,000-99,999	
	1950	1960	1950	1960	1950	1960
	Percent					
Agriculture, forestry, and fisheries	5.3	2.6	11.3	5.4	18.4	9.7
Mining	4.7	1.5	4.3	1.7	4.0	1.5
Manufacturing	32.8	34.0	32.2	35.2	26.0	31.6
Trade, services, and other	55.9	58.2	50.8	54.6	49.9	54.4
Industry not reported	1.3	3.7	1.4	3.1	1.7	2.8
Total employed	100.0	100.0	100.0	100.0	100.0	100.0

Economic activity	Size of center: 25,000-49,999		10,000-24,999		Under 10,000	
	1950	1960	1950	1960	1950	1960
	Percent					
Agriculture, forestry, and fisheries	18.8	9.3	14.4	7.3	37.6	19.7
Mining	6.4	3.2	20.6	9.5	15.6	10.8
Manufacturing	26.4	31.0	23.3	30.7	10.8	18.7
Trade, services, and other	46.8	53.9	40.2	50.0	34.0	48.3
Industry not reported	1.6	2.6	1.5	2.5	2.0	2.5
Total employed	100.0	100.0	100.0	100.0	100.0	100.0

Sources: (8, 9).

employment in manufacturing was directly related to size of centers. In 1960 manufacturing averaged 34.0 percent of total employment in areas with centers of 250,000 and over, and only 18.7 percent in areas with centers under 10,000. This direct relation between proportions of employment in manufacturing and area center size again suggests that the development task for manufacturing will be relatively greater in the small-center areas than in the medium- and large-center areas.

Economic Changes in Small-Center Areas

In 1960 there was considerable variation in incidence of unemployment and low-income families among four geographic groupings of small-center areas. Rates of unemployment varied from an average of 4.6 percent in areas of the southeast periphery of Appalachia to 10.5 percent in areas of the central interior (table 8). Numbers of unemployed persons in excess of 4 percent of the labor force ranged from 1,306 for the six areas in the southeast to 16,402 for the 13 areas of the central interior. Percentages of families with low incomes ranged from 22.7 percent in the northern peripheral areas to 58.8 percent on the southwest periphery. However, numbers of low-income families (in excess of the 1960 national average proportion of 21.4 percent) were highest in the central interior areas, which had 75,530. Together the data on unemployment and low incomes suggest that in 1960 economic conditions were worst in the central interior of the region and perhaps best in the small-center areas of the northern periphery. The southeastern and southwestern peripheral areas had the least unemployment, but low-income situations were high in both rates and numbers, suggesting considerable underemployment. Considering that either unemployment or low incomes (or both) existed in numbers greater than national averages in all four groups of small-center areas, it is concluded that as of 1960 all could have used additional economic activity to combat unemployment and low family incomes.

Changes in employment by major economic activities between 1950 and 1960 among the four groups of small-center areas indicate the adjustments which contributed to differences in 1960 among groups in unemployment and low incomes. Rates of change in total employment varied from a 10.7 percent increase in the southeastern peripheral areas to a 31.1 percent decrease in the central interior areas (table 9). These variations were due in part to extreme differences between the gains in manufacturing, trade, services, and other activities, and the changes in agriculture and mining. In the southeast, agriculture lost 26,998 jobs, mining gained 603, manufacturing added 23,659, and trade, services, etc., added 20,956. Losses in agriculture were thus offset by expansions in other activities (table 9). At the opposite extreme in the central interior, there were heavy losses in both agriculture and mining which overwhelmed token gains in manufacturing, trade, service, and other activities. Manufacturing expanded significantly in the southeast and southwest peripheral areas but little in the central interior and northern peripheral areas.

The 1950-60 changes in employment among major activities in the four small-center groups led to considerable restructuring of the economies of the area groups over the decade. In 1950 all area groups were oriented to agriculture, mining, or both. By 1960 dependence on the two activities had

Table 8.--Data on unemployment and low incomes for four geographic groups of areas with centers under 25,000, Appalachia, 1960

Economic indicator	Area group: Northern peripheral	Central interior	Southeastern peripheral	Southwestern peripheral
Percent unemployed, 1960	7.8	10.5	4.6	5.6
Number unemployed in excess of 4 percent, 1960	4,347	16,402	1,206	2,441
Percent of families with incomes under $3,000, 1960	22.7	52.4	39.7	58.8
Number of families with incomes under $3,000 in excess of national average (21.4 percent), 1960	1,013	75,530	26,049	42,764

Source: (9).

lessened in all area groups, but the central interior and southwestern peripheral areas remained heavily dependent on the two activities for employment. The central areas had a 35.6 percent of total employment in agriculture and mining in 1960, with mining the more important (table 10). The southwestern areas had 28.1 percent of employment in the two activities, with agriculture the leading activity. Proportions of total employment in agriculture and mining in both the northern and southeastern peripheral small-center areas were close to 10 percent, approaching the proportions of larger-center areas. The much heavier dependence of the central interior and southwestern peripheral areas on agriculture and mining in 1960 suggests that they may have more serious adjustment problems in the future.

Manufacturing increased in importance in the economies of all small-center area groups between 1950 and 1960. However, at the end of the decade, it was still relatively unimportant in the central interior areas, comprising only 8.9 percent of total employment (table 10). Its share of total employment increased greatly in both the southeastern and southwestern peripheral area, reflecting the large absolute and percentage gains of the activity in these areas.

Table 9.--Changes in employment in major economic activities for four geographic groups of areas with centers under 25,000, Appalachia, 1950-60

Economic activity	Area group							
	Northern peripheral		Central interior		Southeastern peripheral		Southwestern peripheral	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Agriculture, forestry, and fisheries	-3,104	-35.6	-42,286	-66.4	-26,998	-56.7	-32,274	-47.0
Mining	-6,398	-57.7	-63,939	-52.2	603	57.1	-2,065	-41.6
Manufacturing	1,028	3.2	556	2.9	23,659	37.5	12,610	63.5
Trade, services, and other	9,022	18.3	3,835	3.4	20,956	30.3	12,834	24.7
Industry not reported	1,634	13.7	486	8.3	1,393	49.4	413	13.6
Net change	2,182	2.1	-101,348	-31.1	19,613	10.7	-8,482	-5.7

Sources: (8, 9).

Table 10.--Percentage of total employment among major economic activities in four geographic groups of areas with centers under 25,000, Appalachia, 1950-60

Economic activity	Northern peripheral		Central interior		Southeastern peripheral		Southwestern peripheral	
	1950	1960	1950	1960	1950	1960	1950	1960
	Percent							
Agriculture, forestry, and fisheries	8.5	5.4	19.5	9.5	25.9	10.1	46.3	26.0
Mining	10.8	4.5	37.6	26.1	0.6	0.8	3.3	2.1
Manufacturing	31.4	31.7	6.0	8.9	34.3	42.7	13.4	23.2
Trade, services, and other	48.1	55.7	35.1	52.7	37.7	44.3	35.0	46.2
Industry not reported	1.2	2.7	1.8	2.8	1.5	2.1	2.0	2.5
Total employed	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: (8, 9).

LOCATION FACTORS IN MANUFACTURING

Manufacturing is made up of many industries which differ in output and in factors important in their geographic location. This report is concerned with recent trends in the spatial distribution of manufacturing, so it is useful to secure some perspective on factors which have influenced the location of total manufacturing and the manufacturing industries. Recent research on manufacturing in the United States and Appalachia provides a framework of location factors for assessing trends in Appalachia.

Factors in Total Manufacturing

Three extensive studies provide insights on redistribution of manufacturing within the Nation over the past few decades (3, 5, 7). These studies consider markets, labor, and raw materials as the major determinants in the location of total manufacturing activity. However, they place different weights on the relative importance of each factor in the geographic shifts in manufacturing which have occurred in the Nation.

Perloff, et al., in an appraisal of trends in manufacturing in the United States during 1939-54, indicate that the major redistributional pattern was a shift out of the Manufacturing Belt (the area running generally from Pittsburgh to Chicago) and into the Southeast and West (5). They concluded that the dominant factor behind these shifts was the growth of final markets in the latter areas. However, they suggest that supply of resources and labor was also a significant force.

Fuchs, in his study of changes in the location of manufacturing within the United States during 1929-54, attaches more weight to the influence of resources and labor than Perloff, et al. Fuchs estimated that about one-third of all interregional shifts in manufacturing were due to the location of natural resources, one-third to abundant and inexpensive labor, and the remaining third to changes in demand or to no identifiable force (3, p. 259). According to Fuchs, the West and South made comparative gains due to resources, and the South due to the availability of labor.

Thompson and Mattila arrived at similar conclusions in separate analyses of the durable and nondurable goods industries. Their econometric analysis found State population and income changes associated with from one-fourth to four-fifths of the interstate employment growth differentials in the various durable goods industries. They concluded that "industrialization begets industrialization" in the durables (7, p. 81-83). In the nondurable goods industries Mattila and Thompson found that locational linkage with other industries and urban markets were not important location factors, as these industries tended to locate near natural resource supplies.

A broad background of trends and factors in manufacturing for parts of Appalachia is available in research by Friedmann (2) and Quittmeyer and Thompson (6). Friedmann's analysis is on the Tennessee Valley during 1929-50 and the Quittmeyer and Thompson study deals with the Southern Appalachian Region during 1929-58. Both found considerable expansion of manufacturing in their respective areas of analysis. Quittmeyer and Thompson concluded that

the metropolitan areas dominated in manufacturing activity and that most of the counties with declining manufacturing employment during 1929-54 were rural counties located furthest from industrial centers (6, p. 125-126). Friedmann found rural counties holding their own in manufacturing in the Tennessee Valley as employment expanded at the same rate in rural and urban areas (2, p. 22). However, since urban areas started with much larger bases in 1930 they accrued most of the new jobs over the two decades.

Both studies discuss factors influencing the location of industry. Quittmeyer and Thompson listed textile mill products, lumber and wood products, food and kindred products, and apparel as the four most important manufacturing industries in Southern Appalachia in 1954 (6, p. 126). They indicated that a plentiful supply of low-wage labor was a major location factor in each of these industries, with raw material supplies also important in the food and lumber industries. In a survey of manufacturers in the region, they found that labor, raw materials, and utilities were the most frequently mentioned factors influencing plant location (6, p. 130).

Friedmann indicated that during 1929-54 in the Tennessee Valley two of the most rapidly growing industries (apparel and textiles) were oriented to labor, one (food products) to markets, one (primary metals) to materials, and one (chemicals) to markets and materials. Overall, Friedmann estimated that 45 percent of the increased employment in the Tennessee Valley was primarily oriented to labor, 32 percent to markets, and 20 percent to materials (2, p. 30). On the urban-rural distribution of industry, Friedmann noted a general trend towards the centralization of manufacturing in metropolitan areas (2, p. 31). He suggested that the larger centers provided greater accessibility to markets, materials, and labor than the rural areas (2, p. 31). Locations of central cities on transportation networks provided more flexibility and less cost in serving markets than the peripheral locations of most rural areas (2, p. 33-34). Prior industrialization of the larger centers developed a pool of skilled workers and businesses to service industry, and built agglomerations and linkages among manufacturing industries providing economies for central location (2, p. 39). Two location advantages ascribed to rural areas by Friedmann were availability of raw materials and a plentiful supply of low-cost labor (2, p. 39).

Factors by Industry

Both the national and the Appalachian studies listed factors important in the location of major manufacturing industries. From the discussions of individual industries in the studies the main location factors were noted (table 11). Factors given for 11 major industries included primary dependence on markets in the metal and machinery industries and inexpensive labor in textiles.

This listing of factors was used to assess the redistribution of major manufacturing industries in the United States and Appalachia. In keeping with the reservations of the studies from which the factors were obtained--that the industry groups themselves are often agglomerations of industries which have dissimilar location orientations--it should be stressed that the listed factors are only approximations of the forces influencing the

Table 11.--Primary factors influencing location of 11 major manufacturing industries, as indicated in national and Appalachian studies

Major industry	Three national studies[1]	Two Appalachian studies[2]
Fabricated metal industries	Industrial markets	Markets
Machinery except electrical	Markets	Markets
Transportation equipment	Markets	Markets
Printing, publishing, and allied products	Markets	Markets
Primary metal industries	Markets Raw materials	Materials
Food and kindred products	Local markets Raw materials	Markets
Chemicals and allied products	Markets Raw materials Cheap power	Markets Raw materials
Electrical machinery, equipment, and supplies	Industrial markets Markets Educated labor	Markets Labor
Apparel and other fabricated products	Inexpensive labor Markets	Labor
Furniture, lumber, and wood products	Raw materials Inexpensive labor Regional markets	Labor Markets Materials
Textile mill products	Inexpensive labor	Labor

Sources: [1] (3, 5, 7). [2] (2, 6).

locations of the industry groups. However, they should be useful as guides in assessing the location orientation of industries expanding or contracting in Appalachia.

MANUFACTURING CHANGE IN APPALACHIA COMPARED WITH THE NATION

Industry and Structure Trends

The lag of Appalachia in growth of total employment was due largely to unfavorable mix of economic activities. Comparative growth rates of indus-

tries and differences in industry structure between Appalachia and the Nation suggest the same situation in lesser degree was also the case in manufacturing. Between 1950 and 1960, of the seven industries with the highest national growth rates, only two industries--printing and publishing, and transportation equipment--had growth rates in Appalachia that exceeded the average (table 12). Among the seven nationally slow-growing (or contracting) industries, six grew more rapidly (or contracted less rapidly) in the region than in the Nation. Food, apparel, and motor vehicles are examples of such industries (table 12).

This pattern of differential growth rates in nationally fast- and slow-growing industries between Appalachia and the Nation suggests that the region as a whole has had some comparative advantage relative to the Nation in slow-growth industries. The net effect of the pattern was a greater expansion rate of manufacturing employment in the Nation than in the region. The greater growth rates in nationally slow-growing industries within Appalachia were insufficient to offset the region's lag in growth rates among nationally fast-growing industries.

The effect of differentials in growth rates among nationally fast- and slow-growing industries between Appalachia and the Nation was compounded by an adverse mix of manufacturing industries in the region relative to the Nation. In 1950, 41 percent of national manufacturing employment was in the seven nationally fast-growing industries, while the comparable figure for Appalachia was 34.2 percent (table 13). In 1960, the seven nationally fast-growing industries comprised 49.7 percent of total manufacturing employment for the Nation and 40.6 percent of the total in Appalachia. The difference between proportions increased slightly (table 13). If the same seven industries continue to be the most rapidly expanding nationally, the manufacturing economy of Appalachia will be structurally disadvantaged and will be weighted towards the nationally slow-growing (or contracting) industries.

Location Factors and Change

Location orientations of fast- and slow-growing industries differed in both the region and the Nation. At the national level markets were either the first or second most important location factor in at least six of the seven most rapidly growing industries (table 14). Only among the seven slow-growing (or contracting) industries were raw materials or inexpensive labor the primary orientations. This would suggest that in the Nation between 1950 and 1960 total manufacturing employment may have consolidated in the more urban areas where market-oriented industries would tend to cluster.

The seven industries which grew most rapidly in Appalachia from 1950 to 1960 were also oriented primarily to markets (table 15). However, two industries--apparel and food products--of the top seven were oriented partly to inexpensive labor or raw materials. Both of these industries made high absolute employment gains as well as large percentage increases (table 12). As in the Nation, the seven slow-growing industries in Appalachia were typically oriented to inexpensive labor and raw materials. These slow-growing industries expanded more (or contracted less) in Appalachia than in the Nation.

Table 12.--Employment change in Appalachia and the United States in the major manufacturing industries, 1950-60

Industry	Appalachia		United States
	Employment	Percent	Percent
With highest national growth rates:			
Transportation equipment except motor vehicles	62,367	251.7	100.8
Electrical machinery, equipment, and supplies	70,979	70.4	72.7
Fabricated metals	54,833	45.4	52.5
Chemicals and allied products	35,789	31.8	35.7
Printing, publishing, and allied products	30,610	37.6	32.3
Other durable goods	17,088	8.2	27.1
Machinery, except electrical	36,321	23.4	25.1
With lowest national growth rates:			
Food and kindred products	53,750	36.0	23.0
Apparel and other fabricated products	64,963	43.4	8.7
Other nondurable goods	21,061	11.1	5.9
Primary metals	-6,249	-1.4	3.4
Motor vehicles and equipment	15,599	39.6	-1.7
Furniture, lumber, and wood products	-21,510	-10.5	-10.8
Textile mill products	-42,801	-11.5	-22.3
Total manufacturing	392,800	16.7	19.3

Sources: (8, 9).

Table 13.--Percentage distribution of employment in 14 major manufacturing industries in Appalachia and the United States, 1950 and 1960

Industry	Appalachia		United States	
	1950	1960	1950	1960
	Percent			
With highest national growth rates:				
Transportation equipment, except motor vehicles	1.0	3.2	3.3	5.6
Electrical machinery, equipment, and supplies	4.3	6.3	5.9	8.5
Fabricated metals	5.1	6.4	5.8	7.4
Chemicals and allied products	4.8	5.4	4.3	4.9
Printing, publishing, and allied products	3.5	4.1	5.9	6.5
Other durable goods	8.9	8.2	7.3	7.8
Machinery except electrical	6.6	7.0	8.5	9.0
Subtotal	34.2	40.6	41.0	49.7
With lowest national growth rates:				
Food and kindred products	6.4	7.4	10.1	10.4
Apparel and other fabricated products	6.4	7.8	7.3	6.6
Other nondurable goods (and not specified manufacturing)	8.0	7.6	11.2	10.0
Primary metals	18.8	15.9	8.1	7.0
Motor vehicles and equipment	1.7	2.0	5.8	4.8
Furniture, lumber and wood products	8.7	6.6	8.1	6.1
Textile mill products	15.8	12.1	8.4	5.4
Subtotal	65.8	59.4	59.0	50.3
Total manufacturing	100.0	100.0	100.0	100.0

Sources: (8, 9).

Table 14.--United States: Rates of employment change, 1950-60, in 14 major manufacturing industries, and major factors influencing location of the industries

Industry	Change 1950-60	Location factors
	Percent	
With highest national growth rates:		
Transportation equipment, except motor vehicles	100.8	Markets
Electrical machinery, equipment, and supplies	72.7	Markets Educated labor
Fabricated metals	52.5	Industrial markets
Chemicals and allied products	35.7	Markets Raw materials
Printing, publishing, and allied products	32.3	Markets
Other durable goods	27.1	No data
Machinery, except electrical	25.1	Markets
With lowest national growth rates:		
Food and kindred products	23.0	Local markets Raw materials
Apparel and other fabricated products	8.7	Inexpensive labor Markets
Other nondurable goods	5.9	No data
Primary metals	3.4	Markets Raw materials
Motor vehicles and equipment	-1.7	No data
Furniture, lumber, and wood products	-10.8	Raw materials Inexpensive labor
Textile mill products	-22.3	Inexpensive labor

Sources: (2, 3, 5, 6, 7)

Table 15.--Appalachia: Rates of employment change, 1950-60, in 14 major manufacturing industries, and major factors influencing location of the industries

Industry	Change 1950-60	Location factors
	Percent	
With highest growth rates in Appalachia:		
Transportation equipment, except motor vehicles	251.7	Markets
Electrical machinery, equipment and supplies	70.4	Markets Educated labor
Fabricated metals	45.4	Industrial markets
Apparel and other fabricated products	43.4	Inexpensive labor Markets
Motor vehicles and equipment	39.6	No data
Printing, publishing and allied products	37.6	Markets
Food and kindred products	36.0	Local markets Raw materials
With lowest growth rates in Appalachia:		
Chemicals and allied products	31.8	Markets Raw materials
Machinery, except electrical	23.4	Markets
Other nondurable goods	11.1	No data
Other durable goods	8.2	No data
Primary metals	-1.4	Markets Raw materials
Furniture, lumber and wood products	-10.5	Raw materials Inexpensive labor
Textile mill products	-11.5	Inexpensive labor

Sources: (2, 3, 5, 6, 7).

The net effect over the 1950-60 decade was a relative redistribution of market-oriented industries out of Appalachia and of inexpensive labor and raw material oriented industries into the region. Raw materials and inexpensive labor as well as markets were important in the expansion of manufacturing employment in the region as a whole.

MANUFACTURING CHANGE AMONG AREAS OF APPALACHIA

Employment changes in manufacturing varied considerably among areas of Appalachia between 1950 and 1960. Changes in major manufacturing industries would appear to be relevant to the prospects for manufacturing within the region. Three important aspects of change among areas are:

(1) changes in individual industry employment;

(2) changes in location patterns of industry; and

(3) changes in the total structure of manufacturing employment.

To assess the three aspects of change, it is useful to group the areas according to size of center and to divide industries into nationally fast- or slow-growing groups. The grouping of areas by size of center indicates the "urban-rural" change and the grouping of industries by national growth rates provides comparison with national currents in manufacturing.

Industry Trends

Employment in the 14 major industries of manufacturing expanded (or contracted) at both different percentage rates and different absolute amounts among areas of Appalachia in the 1950's. The general pattern of change for total manufacturing, as previously indicated, was one of gains in all area groups. However, rates of change were generally inverse to area center size while numbers of employed changed more in large- than in small-center areas. This pattern was also typical among individual industries, but with some variations between nationally fast- and slow-growing industries.

Among the seven fast-growing industries at the national level, rates of growth among areas grouped by size of center were usually moderately inverse to the size of centers (table 16). However, most of the employment growth in these industries occurred in areas with centers of at least 25,000 or over. Extreme examples of this pattern were the transportation equipment and chemicals industries in which 82 and 74.4 percent, respectively, of the regional gains went to areas with centers of 100,000 and over. Areas with centers under 25,000 had only 1.9 and 2.2 percent of the regional gains in transportation equipment and chemicals respectively. In most of the national top seven growth industries, areas with centers of 250,000 and over received over 40 percent of regional gains, the three area size groups between 25,000 and 249,999 each had from 15 to 20 percent of regional increases in employment, and the two area groups under 25,000 had only 1 or 2 percent of the region's

gains (table 16). The overall pattern among the nationally fast-growing industries was obviously one of the larger-center areas securing most of the regional increases in employment even though rates of growth were greater in the smaller-center areas. Since the large-center areas started with large employment bases in most fast-growing industries in 1950, high rates of increase were difficult to attain. The reverse was true among small-center areas.

Among the nationally slow-growing industries, absolute changes in employment were much more equally distributed among area groups. Areas with centers under 25,000 secured 32.3 percent of regional net gains in the seven slow-growing industries while areas with centers of 100,000 and over had 30.8 percent (table 16). The small-center areas had substantial gains in the apparel, textile, and furniture, lumber, and wood products industries. Indeed, in the latter two industries, areas with centers under 25,000 were practically the only area groups with increases in employment.

This differential pattern of growth between nationally fast- and slow-growing industries resulted in some redistribution of regional employment among area groups. In 1950 the nationally fast-growing industries were more heavily concentrated in large-center areas than the nationally slow-growing industries (table 17). Over the decade there was some shift in shares of regional employment in nationally fast- and slow-growing industries from large- to medium- and small-center areas. However, the patterns of redistribution differed between fast- and slow-growing industries.

Among the nationally fast-growing industries, the large-center areas generally lost in shares of regional employment most of the gains going to medium-center areas. In the slow-growing industries, the larger-center areas again lost in regional share; the small-center areas (under 25,000) secured most of the gains (table 17). There were some exceptions to this general shift pattern. Transportation equipment and chemicals among the fast-growing industries became concentrated even more heavily in large-center areas. Areas with centers of 250,000 and over had 53.3 percent of regional employment in transportation equipment in 1950 and 63.0 percent in 1960 (table 17). In chemicals, areas with centers of 100,000 and over had 62.6 percent of regional employment in 1950 and 65.4 percent in 1960. Among slow-growing industries, the main shifts in shares of regional employment in food products, other nondurables, and primary metals were from large- to medium- rather than to small-center areas.

Location Factors and Change

In general, the nationally fast-growing industries strengthened their heavy concentration in either the large- or medium-center areas, while the nationally slow-growing industries increased their dispersal among small-center areas. This pattern of change prompts the question of what factors influenced this redistribution. Some insight can be secured by analyzing the growth trends in relation to the major location factors of industries.

Between 1950 and 1960 most of the employment expansion in nationally fast-growing industries accrued to large- and medium-center areas. Since these industries were typically oriented to markets, this suggests that the large- and

Table 16.--Number change, percentage change, and percentage of gains (for groups with gains) in employment for 14 major manufacturing industries in areas of Appalachia grouped by size of center, 1950-60

Industry	Unit	Size of center: 250,000 & over	100,000-249,999	50,000-99,999	25,000-49,999	10,000-24,999	Under 10,000	Appalachia
With highest national growth rate:								
Transportation equipment except motor vehicles	Number change	41,696	9,439	5,510	4,526	706	490	62,367
	Percent change	315.4	249.3	250.0	87.1	493.7	214.9	251.7
	Percent of gains	66.9	15.1	8.8	7.3	1.1	0.8	100.0
Electrical machinery equipment and supplies	Number change	30,330	12,387	13,114	13,276	951	921	70,979
	Percent change	48.2	83.8	142.2	231.8	11.9	902.9	70.4
	Percent of gains	42.7	17.5	18.5	18.7	1.3	1.3	100.0
Fabricated metals	Number change	22,370	9,130	6,788	14,560	1,651	334	54,833
	Percent change	32.6	28.9	97.5	116.7	214.4	96.5	45.4
	Percent of gains	40.7	16.7	12.4	26.6	3.0	0.6	100.0
Chemicals and allied products	Number change	11,527	15,142	5,183	3,175	416	346	35,789
	Percent change	37.9	38.0	60.5	10.8	11.8	67.6	31.8
	Percent of gains	32.2	42.2	14.5	8.9	1.2	1.0	100.0
Printing, publishing, and allied products	Number change	16,500	5,955	2,652	4,338	810	355	30,610
	Percent change	37.8	35.0	29.7	48.0	43.4	41.9	37.6
	Percent of gains	53.8	19.5	8.7	14.2	2.6	1.2	100.0
Other durable goods	Number change	836	5,757	4,593	3,234	1,744	924	17,088
	Percent change	0.8	11.5	23.7	10.8	22.2	50.2	8.2
	Percent of gains	4.9	33.7	26.9	18.9	10.2	5.4	100.0
Machinery except electrical	Number change	16,093	6,182	7,620	4,875	1,097	454	36,321
	Percent change	22.5	12.9	47.6	27.9	55.5	83.5	23.4
	Percent of gains	44.4	17.0	21.0	13.4	3.0	1.2	100.0
Subtotal	Number change	139,352	63,992	45,460	47,984	7,375	3,824	307,987
	Percent change	35.7	31.2	63.8	43.8	30.5	86.5	38.3
	Percent of gains	45.2	20.8	14.8	15.6	2.4	1.2	100.0

Table 16.--Number change, percentage change, and percentage of gains (for groups with gains) in employment for 14 major manufacturing industries in areas of Appalachia grouped by size of center, 1950-60--continued

Industry	Unit	Size of center: 250,000 & over	100,000-249,999	50,000-99,999	25,000-49,999	10,000-24,999	Under 10,000	Appalachia
With lowest national growth rate:								
Food and kindred products	Number change	20,017	13,312	6,757	8,778	3,280	1,606	53,750
	Percent change	27.3	37.9	42.9	50.0	61.2	70.4	36.0
	Percent of gains	37.2	24.8	12.6	16.3	6.1	3.0	100.0
Apparel and other fabricated products	Number change	9,901	18,528	7,655	11,428	5,781	11,670	64,963
	Percent change	15.2	49.3	38.4	61.5	106.1	364.1	43.4
	Percent of gains	15.2	28.5	11.8	17.6	8.9	18.0	100.0
Other nondurable goods (not specified manufacturing)	Number change	4,479	2,812	9,276	3,448	866	180	21,061
	Percent change	6.2	5.5	26.4	15.4	22.0	5.4	11.1
	Percent of gains	21.3	13.4	43.9	16.4	4.1	0.9	100.0
Primary metals	Number change	-15,303	2,421	2,984	3,172	266	211	-6,249
	Percent change	-5.1	2.6	10.9	15.9	7.4	41.0	-1.4
	Percent of gains	0.0	26.7	33.0	35.1	2.9	2.3	100.0
Motor vehicles and equipment	Number change	10,378	1,781	1,235	1,249	442	514	15,599
	Percent change	35.1	30.0	52.1	139.7	108.6	231.5	39.6
	Percent of gains	66.5	11.4	7.9	8.0	2.8	3.3	100.0
Furniture, lumber, and wood products	Number change	-6,553	-4,058	-2,753	-6,556	2,491	-4,081	-21,510
	Percent change	-16.7	-9.1	-7.8	-17.0	9.5	-19.9	-10.5
	Percent of gains	0.0	0.0	0.0	0.0	100.0	0.0	100.0
Textile mill products	Number change	-19,957	-11,675	184	-15,528	1,781	2,394	-42,801
	Percent change	-31.4	-7.6	0.4	-21.4	6.3	108.2	-11.5
	Percent of gains	0.0	0.0	4.3	0.0	40.9	54.8	100.0
Subtotal	Number change	2,962	23,121	25,338	5,991	14,907	12,494	84,813
	Percent change	0.5	5.5	13.5	3.1	20.4	38.7	5.4
	Percent of gains	3.5	27.3	29.8	7.1	17.6	14.7	100.0
Total manufacturing	Number change	142,314	87,113	70,798	53,975	22,282	16,318	392,800
	Percent change	13.8	13.9	27.3	18.0	22.9	44.4	16.6
	Percent of gains	36.2	22.2	18.0	13.7	5.7	4.2	100.0

Sources: (8, 9).

Table 17.--Percentage distribution of regional employment in 14 major manufacturing industries in areas of Appalachia grouped by size of center, 1950-60

Industry	Year	Size of center: 250,000 & over	100,000-249,999	50,000-99,999	25,000-49,999	10,000-24,999	Under 10,000	Appalachia
		Percent						
With highest national growth rate:								
Transportation equipment except motor vehicles	1950	53.3	15.3	8.9	21.0	0.6	0.9	100.0
	1960	63.0	15.2	8.8	11.2	1.0	0.8	100.0
	Change	9.7	-0.1	-0.1	-9.8	0.4	-0.1	---
Electrical machinery equipment and supplies	1950	62.5	14.7	9.1	5.7	7.9	0.1	100.0
	1960	54.3	15.8	13.0	11.1	5.2	0.6	100.0
	Change	-8.2	1.1	3.9	5.4	-2.7	0.5	---
Fabricated metals	1950	56.8	26.2	5.8	10.3	0.6	0.3	100.0
	1960	51.8	23.2	7.8	15.4	1.4	0.4	100.0
	Change	-5.0	-3.0	2.0	5.1	0.8	0.1	---
Chemicals and allied products	1950	27.0	35.6	7.6	26.2	3.1	0.5	100.0
	1960	28.3	37.1	9.3	22.1	2.6	0.6	100.0
	Change	1.3	1.5	1.7	-4.1	-0.5	0.1	---
Printing, publishing, and allied products	1950	53.7	20.9	11.0	11.1	2.3	1.0	100.0
	1960	53.8	20.4	10.4	11.0	2.4	1.1	100.0
	Change	0.1	-0.5	-0.6	0.8	0.1	0.1	---
Other durable goods	1950	47.8	23.8	9.3	14.4	3.8	0.9	100.0
	1960	44.7	24.6	10.6	14.7	4.2	1.2	100.0
	Change	-3.1	0.8	1.3	0.3	0.4	0.3	----
Machinery, except electrical	1950	46.0	30.9	10.3	11.2	1.3	0.3	100.0
	1960	45.7	28.2	12.3	11.7	1.6	0.5	100.0
	Change	-0.3	-2.7	3.0	0.5	0.3	0.2	---
Subtotal	1950	48.5	25.5	8.9	13.6	3.0	0.5	100.0
	1960	47.6	24.2	10.5	14.2	2.8	0.7	100.0
	Change	-0.9	-1.3	1.6	0.6	-0.2	0.2	---

Table 17.--Percentage distribution of regional employment in 14 major manufacturing industries in areas of Appalachia grouped by size of center, 1950-60--continued

Industry	Year	Size of center: 250,000 & over	100,000-249,999	50,000-99,999	25,000-49,999	10,000-24,999	Under 10,000	Appalachia
		Percent						
With lowest national growth rate:								
Food and kindred products	1950	49.2	23.5	10.5	11.7	3.6	1.5	100.0
	1960	46.0	23.8	11.1	13.0	4.2	1.9	100.0
	Change	-3.2	0.3	0.6	1.3	0.6	0.4	---
Apparel and other fabricated products	1950	43.5	25.1	13.3	12.4	3.6	2.1	100.0
	1960	34.9	26.2	12.8	14.0	5.2	6.9	100.0
	Change	-8.6	1.1	-0.5	1.6	2.6	4.8	---
Other nondurable goods (not specified manufacturing)	1950	38.5	27.3	18.6	11.8	2.0	1.8	100.0
	1960	36.7	25.9	21.2	12.2	2.3	1.7	100.0
	Change	-1.8	-1.4	2.6	0.4	0.3	-0.1	---
Primary metals	1950	67.4	21.0	6.2	4.5	0.8	0.1	100.0
	1960	64.9	21.8	6.9	5.3	0.9	0.2	100.0
	Change	-2.5	0.8	0.7	0.8	0.1	0.1	---
Motor vehicles and equipment	1950	75.0	15.1	6.0	2.3	1.0	0.6	100.0
	1960	72.6	14.1	6.6	3.9	1.5	1.3	100.0
	Change	-2.4	-1.0	0.6	1.6	0.5	0.7	---
Furniture, lumber and wood products	1950	19.2	21.8	17.2	18.9	12.8	10.1	100.0
	1960	17.9	22.1	17.8	17.6	15.6	9.0	100.0
	Change	-1.3	0.3	0.6	-1.3	2.8	-1.1	---
Textile mill products	1950	17.1	41.2	14.0	19.5	7.6	0.6	100.0
	1960	13.2	43.1	15.9	17.3	9.1	1.4	100.0
	Change	-3.9	1.9	1.9	-2.2	1.5	0.8	---
Subtotal	1950	41.5	27.2	12.1	12.3	4.7	2.1	100.0
	1960	39.6	27.2	13.1	12.0	5.4	2.7	100.0
	Change	-2.0	0.0	1.0	-0.3	0.7	0.6	---
Total manufacturing	1950	43.9	26.6	11.0	12.8	4.1	1.6	100.0
	1960	42.8	26.0	12.0	12.9	4.4	1.9	100.0
	Change	-1.1	-0.6	1.0	0.1	0.3	0.3	---

Sources: (8, 9).

medium-center areas were much more attractive locations for market-oriented industries than the small-center areas. Indeed, the small proportions of total regional gains in fast-growing market-oriented industries secured by small-center areas raises a serious question as to whether they can in the future hope to attract the most rapidly expanding sectors of manufacturing.

The fact that most employment gains in small-center areas were in the slow-growing textile and apparel industries suggests that while the small-center areas had little to induce the location and expansion of market-oriented industries, they were on the other hand conducive to the growth of industries in need of inexpensive labor. Moderate expansions in employment in food products and in furniture, lumber, and wood products also imply that raw material supplies for these industries were a positive force in manufacturing growth among small-center areas.

Structural Changes

The third important aspect of industry changes among areas between 1950-60 was their impact on the structure of manufacturing. It seems reasonable to assume that changes in the mix of industries, and especially in the proportions of nationally fast- and slow-growing industries, may have some bearing on the prospects of different areas for future growth in manufacturing. While it is already evident that areas can achieve substantial growth by having above average rates of increase in nationally slow-growing industries, this kind of growth cannot be sustained for long. It is more likely that these industries are shifting location within the Nation; when the shifts are exhausted, rates of growth should decline to national levels in such areas. It is assumed then that the more heavily the industry structure of areas is weighted with fast-growing industries, the greater should be their growth prospects. The total industry structure of areas is thus important to analyze.

In observing the changes in employment among areas grouped by size of center, several potentially significant differences are evident. Area groups with centers of 25,000 and over averaged more than 62 percent of total industry gains in the fast-growing industries, while areas with centers from 10,000 to 24,999 had but 33.1 percent and areas under 10,000 only 18.6 percent (table 18). This again emphasizes the fact that both large- and medium-center areas were able to secure substantial employment growth in nationally fast-growing industries and thus move with national currents in manufacturing, while small-center areas were much less able to do so.

In 1950 there was a general and direct relationship between area center size and proportion of employment in fast-growing industries. Areas with centers of 250,000 and over averaged 37.7 percent of employment in fast-growing industries and areas with centers under 10,000 only 12.1 percent (table 19). Over the decade the proportions of total manufacturing employment in fast-growing industries increased in all areas. However, the large- and medium-center areas increased their proportions of employment more than the small-center areas. Proportions rose from 5 to 8 percent in areas with centers over 25,000 but only 2 to 3 percent in those with centers under 25,000 (table 19).

Table 18.--Percentage distribution of total industrial employment increases (among industries having increases) for areas of Appalachia grouped by size of center, 1950-60

Industry	Size of center: 250,000 & over	100,000-249,999	50,000-99,999	25,000-49,999	10,000-24,999	Under 10,000
	Percent					
With highest national growth rate:						
Transportation equipment, except motor vehicles	22.6	9.2	6.6	6.0	3.2	2.4
Electrical machinery, equipment and supplies	16.5	12.0	15.7	17.5	4.3	4.5
Fabricated metals	12.1	8.9	8.1	19.1	7.4	1.6
Chemicals and allied products	6.3	14.7	18.1	4.2	1.9	1.7
Printing, publishing, and allied products	9.0	5.8	3.2	5.7	3.6	1.7
Other durable goods	0.5	5.6	5.5	4.3	7.8	4.5
Machinery, except electrical	8.7	6.0	9.1	6.4	4.9	2.2
Subtotal	75.7	62.2	63.3	63.2	33.1	18.6
With lowest national growth rate:						
Food and kindred products	10.9	12.9	8.1	11.5	14.7	7.9
Apparel and other fabricated products	5.4	18.1	9.2	15.0	25.9	57.3
Other nondurable goods (not specified manufacturing)	2.4	2.7	11.1	4.5	3.9	0.9
Primary metals	(-)	2.4	3.6	4.2	1.2	1.0
Motor vehicles and equipment	5.6	1.7	1.5	1.6	2.0	2.5
Furniture, lumber, and wood products	(-)	(-)	(-)	(-)	11.2	(-)
Textile mill products	(-)	(-)	0.2	(-)	8.0	11.8
Subtotal	24.3	37.8	33.7	36.8	66.9	81.4
Total manufacturing	100.0	100.0	100.0	100.0	100.0	100.0

(-) indicates that industry employment in area group declined during 1950-60. Sources: (8, 9).

Table 19.--Percentage distribution of total employment among 14 major manufacturing industries in areas of Appalachia grouped by size of center, 1950 and 1960

Industry	250,000 & over		100,000-249,999		50,000-99,999	
	1950	1960	1950	1960	1950	1960
	Percent					
With highest national growth rate:						
Transportation equipment, except motor vehicles. .	1.3	4.7	0.6	1.9	0.8	2.3
Electrical machinery, equipment and supplies .	6.1	7.9	2.4	3.8	3.6	6.8
Fabricated metals	6.6	7.7	5.0	5.7	2.7	4.2
Chemicals and allied products	2.9	3.6	6.4	7.7	3.3	4.2
Printing, publishing and allied products.	4.2	5.1	2.7	3.2	3.4	3.5
Other durable goods . . .	9.7	8.6	8.0	7.8	7.5	7.3
Machinery, except electrical	6.9	7.5	7.7	7.6	6.2	7.2
Subtotal.	37.7	45.1	32.8	37.7	27.5	35.5
With lowest national growth rate:						
Food and kindred products	7.1	7.9	5.6	6.8	6.1	6.8
Apparel and other fabricated products	6.3	6.4	6.0	7.9	7.9	8.4
Other nondurable goods (not specified manufacturing).	7.0	6.6	8.2	7.6	13.6	13.5
Primary metals.	29.1	24.1	14.9	13.4	10.5	9.2
Motor vehicles and equipment.	2.9	3.4	1.0	1.1	0.9	1.1
Furniture, lumber, and wood products.	3.8	2.8	7.1	5.7	13.6	9.8
Subtotal.	62.3	54.9	67.2	62.3	72.5	64.5
Total manufacturing	100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing as percentage of total employment .	32.8	34.0	32.2	35.2	26.0	31.6

Table 19.--Percentage distribution of total employment among 14 major manufacturing industries in areas of Appalachia grouped by size of center, 1950 and 1960--continued

Industry	25,000-49,999		10,000-24,999		Under 10,000	
	1950	1960	1950	1960	1950	1960
	Percent					
With highest national growth rate:						
Transportation equipment, except motor vehicles. . .	1.7	2.7	0.2	0.7	0.7	1.4
Electrical machinery, equipment and supplies . .	1.9	5.4	8.2	7.5	0.3	1.9
Fabricated metals	4.2	7.6	0.8	2.0	0.9	1.3
Chemicals and allied products	9.8	9.2	3.6	3.3	1.4	1.6
Printing, publishing, and allied products. . . .	3.0	3.8	1.9	2.2	2.3	2.3
Other durable goods	10.0	9.4	8.1	8.1	5.0	5.2
Machinery, except electrical	5.8	6.3	2.0	2.6	1.5	1.9
Subtotal.	36.4	44.4	24.8	26.4	12.1	15.6
With lowest national growth rate:						
Food and kindred products .	5.9	7.4	5.5	7.2	6.2	7.3
Apparel and other fabricated products	6.2	8.5	5.6	9.4	8.7	28.0
Other nondurable goods (not specified manufacturing).	7.4	7.3	4.0	4.0	9.0	6.6
Primary metals.	6.7	6.5	3.7	3.2	1.4	1.4
Motor vehicles and equipment.	0.3	0.6	0.4	0.7	0.7	1.4
Furniture, lumber, and wood products.	12.9	9.1	26.9	24.0	55.9	31.0
Textile mill products . . .	24.2	16.2	29.1	25.1	6.0	8.7
Subtotal.	63.6	55.6	75.2	73.6	87.9	84.4
Total manufacturing	100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing as percentage of total employment . .	26.4	31.0	23.3	30.7	10.8	18.7

Sources: (8, 9).

In 1960, after the changes of the 1950's, the large- and medium-center groups still had more fast-growing industries than the small-center areas. Proportions of total manufacturing employment in the fast-growing industries ranged from 35 to 45 percent in the four area groups with centers of 25,000 and over, but only 26.4 and 15.6 percent in the two groups with centers under 25,000.

If the top seven nationally fast-growing industries of the 1950's continue to be the most rapidly growing industries, it would appear that all areas with centers of 25,000 and over should be in favorable positions for an expansion of manufacturing. Small-center areas, on the other hand, may not be in as advantageous a position, with structures more heavily weighted to slow-growing industries. The apparent disadvantage of the small-center areas could, of course, be offset by the continued rapid growth of nationally slow-growing industries in the small-center areas.

Changes in Small-Center Areas

Employment changes varied considerably among small-center areas within Appalachia. These differences are relevant to the prospects for manufacturing among the small-center areas. It was previously indicated that manufacturing had expanded much more rapidly in the southeastern and southwestern peripheral small-center areas than in the northern peripheral and central interior areas. Data in table 20 indicate the differential industry changes among the four geographic groups of areas. In the northern peripheral and central interior areas, employment gains were modest in all industries. No single industry expanded by as much as 1,000 employees between 1950 and 1960. Net gains in these areas were greater in the nationally fast-growing industries than in slow-growing industries. The furniture, lumber, and wood products industry was the chief employment loser in the central interior areas. Textiles declined and apparel made only modest gains in the northern peripheral and central interior areas.

In the southeastern and southwestern small-center groups, the substantial gains in total manufacturing were mainly in nationally slow-growing industries. The southwestern areas had most of their employment increases in the apparel industry with token gains in all other industries except food products (table 20). Growth in the southeastern peripheral areas was more evenly balanced among industries, but four slow-growing industries--food products, apparel, textiles, and furniture, lumber, and wood products--still comprised most of the expansion. Gains in electrical machinery and other durables among the fast-growing industries were of some significance.

The pattern of industry changes during 1950-60 among geographic groups of small-center areas was one of minimal gains in nationally fast-growing industries in all groups--with the possible exception of the southeastern peripheral areas. Slow-growing industries, those dependent upon inexpensive labor or raw materials, on the other hand, expanded considerably in the southeastern and southwestern peripheral areas.

In 1950, the proportion of total employment in nationally fast-growing industries was under 15 percent in all small-center groups except the northern

Table 20.--Number and percentage change in employment in 14 major manufacturing industries among four geographic groups of areas with centers under 25,000 in Appalachia, 1950-60

Industry	Northern periphery		Southeast periphery		Central interior		Southwest periphery	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
With highest national growth rate:								
Transportation equipment, except motor vehicles. . .	340	281.0	263	1,195.5	153	831.8	410	199.0
Electrical machinery equipment and supplies.	-910	-11.7	1,775	1,123.4	710	533.8	297	724.4
Fabricated metals	614	153.1	953	286.2	139	102.2	279	133.4
Chemicals and allied products	210	6.8	11	1.8	194	93.7	347	294.1
Printing, publishing, and allied products.	366	52.4	326	51.0	306	32.2	167	39.2
Other durable goods	346	5.7	1,679	96.4	-14	-1.9	657	53.5
Machinery, except electrical	490	65.7	629	77.0	-4	-0.6	436	143.0
Subtotal	1,456	7.7	5,636	130.3	1,514	53.6	2,593	100.9
With lowest national growth rate:								
Food and kindred products .	201	12.8	2,791	110.5	849	36.0	1,045	188.3
Apparel and other fabricated products	792	36.4	6,205	195.0	445	104.0	10,011	348.7
Other nondurable goods (not specified manufacturing) .	-32	-1.1	1,057	159.4	-28	-2.0	49	2.2
Primary metals.	-33	-1.0	98	18.3	296	99.3	116	210.9
Motor vehicles and equipment	178	370.8	298	197.9	147	47.3	342	275.8
Furniture, lumber, and wood products.	-185	-10.3	3,285	13.7	-2,607	-23.1	-2,083	-21.7
Textile mill products . . .	-600	-63.8	4,298	15.4	-60	-12.2	537	46.2
Subtotal.	319	2.5	18,023	30.6	-958	-5.8	10,017	58.0
Total manufacturing	1,775	5.6	23,659	37.5	556	2.9	12,610	63.5

Sources: (8, 9).

peripheral areas where it was nearly 60 percent (table 21). The high proportion of employment in fast-growing industries in the northern peripheral areas in 1950 did not result in a high growth rate over the decade. Rates of growth in the fast-growing industries were modest and were offset in part by declines in slow-growing industries such as textiles and furniture, lumber, and wood products.

All geographic groups increased their proportions employed in fast-growing industries from 1950 to 1960. However, all groups except the northern peripheral areas remained heavily oriented to nationally slow-growing industries.

PROSPECTS FOR GROWTH

Assuming that recent patterns of economic change will not shift significantly in the near future, what can be said about the growth prospects of industries and areas in Appalachia? Especially, what are the relative possibilities for employment expansion among the areas with large (100,000 and over), medium (25,000-99,999), and small (under 25,000) centers?

An assessment of future employment growth among areas of Appalachia should first consider their present unemployment and low income situations. The current incidence of unemployment and families with low incomes suggests the extent to which employment may have to expand--barring extensive outmigration of the unemployed or low income families--for an area to reach a "normal" economic condition. The data on unemployment and low incomes for area groups indicated that in 1960 rates of unemployment and proportions of families with low incomes on the average varied inversely with the size of area centers. This implies that the smaller-center areas will have to achieve greater rates of employment expansion than either the medium- or large-center areas if they are to overcome their current above-average rates of unemployment and proportions of families with low incomes. In numbers of excess (above 4 percent) unemployed, the large- and medium-center areas in 1960 had the bulk of Appalachia's total, implying that a greater number of new jobs were needed in these area groups than in the small-center areas collectively. However, numbers of excess low-income situations (above 21.4 percent of all families) were fairly equally distributed among the medium- and small-center groups with the large-center areas having the fewest. If low income situations are a measure of underemployment, this could mean that the need for additional jobs may be nearly as great in the small-center areas (as a group) as in the medium- and large-center areas.

Assuming that absolute needs for employment growth are somewhat greater in the large- and medium-center areas but that the rates of employment growth will need to be inverse to center size in order to overcome unemployment and low incomes among area groups in 1960, what then might be the prospects for future expansions in employment among large-, medium-, and small-center areas? Assessing first the overall economies of area groups, growth prospects would appear most favorable for the large-center areas and least favorable for the small-center areas. This conclusion rests on (1) the assumption that the chronically declining employment in agriculture and mining will not reverse its long-term trend and (2) the fact that the overall employment structure of area groups in 1960 indicated an inverse relation between center size and

Table 21.--Percentage distribution of total manufacturing employment among 14 major industries for four geographic groups of areas with centers under 25,000 in Appalachia, 1950-60

Industry	Northern peripheral		Southeast peripheral		Central interior		Southwest peripheral	
	1950	1960	1950	1960	1950	1960	1950	1960
	Percent							
With highest national growth rate:								
Transportation equipment, except motor vehicles	0.4	1.4	0.0	0.3	0.1	1.0	1.0	1.9
Electrical machinery equipment and supplies	24.7	20.7	0.3	2.2	0.7	4.2	0.2	1.0
Fabricated metals	1.3	3.1	0.5	1.5	0.7	1.4	1.2	1.6
Chemicals and allied products	9.8	9.9	1.0	0.7	1.1	2.0	0.6	1.4
Printing, publishing, and allied products	2.2	3.2	1.0	1.1	4.9	6.3	2.1	1.8
Other durable goods	19.1	19.2	2.8	3.9	3.7	3.5	6.2	5.8
Machinery, except electrical	2.4	3.7	1.3	1.7	3.4	3.3	1.5	2.3
Subtotal	59.9	61.2	6.9	11.4	14.5	21.7	12.8	15.8
With lowest national growth rate:								
Food and kindred products	5.0	5.3	4.0	6.1	12.1	16.0	6.0	6.9
Apparel and other fabricated products	6.9	8.9	5.0	10.8	2.2	4.4	14.5	39.8
Other nondurable goods (not specified manufacturing)	9.1	8.6	1.0	2.0	7.3	7.0	11.5	7.2
Primary metals	10.2	9.5	0.8	0.7	1.5	3.0	0.3	0.5
Motor vehicles and equipment	0.2	0.7	0.2	0.5	1.6	2.3	0.6	1.4
Furniture, lumber, and wood products	5.7	4.8	37.9	31.4	58.2	43.4	48.4	23.2
Textile mill products	3.0	1.0	44.2	37.1	2.5	2.2	5.9	5.2
Subtotal	40.1	38.8	93.1	88.6	85.4	78.3	87.2	84.2
Total manufacturing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: (8, 9).

proportion employed in agriculture and mining. If agriculture and mining continue to demand less and less labor, area economies most heavily dependent on these activities will be the most disadvantaged for future employment growth. They will continue to have the most pressing needs to substitute employment in other activities to absorb the labor released by agriculture and mining. While it is possible that (1) some of the workers released by agriculture and mining may be older persons who would soon retire in any case and (2) increases in total farm income and total wages from mining might partially offset employment reductions by stimulating local services industries, it is hard to see how future employment growth can avoid a direct relationship to the degree of dependence on agriculture and mining. Since in 1960 the economies of small-center areas were much more dependent upon agriculture and mining than the medium- or large-center areas, their prospects for overall employment growth appear the least favorable.

Manufacturing strengthened its position during 1950-60 as the leading export activity of Appalachia by expanding at a near-national rate in the region. What then can be said of its potential to generate employment among area groups? While prospects for continued growth of manufacturing in Appalachia as a whole appear favorable on the basis of recent national and regional trends, appraisal of the future of manufacturing among area groups is difficult because of area differences in industry mix. Manufacturing in the 1950's had its fast- and slow-growing (or declining) industries at the national level. Although these national trends will probably not be reversed to any degree, they do not pave the way for a clearcut prediction that growth rates in manufacturing among areas of Appalachia will closely resemble national growth rates. Except in agriculture and mining, changes in contracting industries were not consistent among areas of Appalachia. Nationally fast-growing industries typically expanded in most area groups (although at widely differing rates and amounts) but several nationally slow-growing or declining industries grew rapidly in some areas while contracting in others. This fact makes an appraisal of growth prospects of manufacturing among area groups hazardous. At best, observation of the strength of area groups in fast-growing industries must be tempered by weighing their continuing capacity to secure gains in slow-growing or declining industries.

Three aspects of industry employment changes within Appalachia from 1950 to 1960 appear to have some bearing on prospects for future employment growth among area groups. First, most of the job gains in fast-growing industries accrued to large- and medium-center areas. Gains of small-center areas in fast-growing industries were distinctly modest. Similarly, the proportions of gains in manufacturing employment over the decade were largest in fast-growing industries in large- and medium-center groups. Employment gains in small-center areas were chiefly in slow-growing industries.

The effect of these differences in employment gains was to maintain and even slightly increase the disparity in proportions of total manufacturing employment in nationally fast- and slow-growing industries among area groups. In 1960, the large- and medium-center areas had nearly similar proportions of manufacturing employment in fast-growing industries, proportions which on average were considerably greater than those of small-center areas. Rates of increase in total manufacturing employment between 1950 and 1960 were somewhat inverse to the size of area centers, generally because of the rapid growth rates of slow-growing industries in small-center areas.

Looking to the future, the fast-growing industries appear to have the best growth prospects in the large- and medium-center areas of the region. The nationally fast-growing industries may continue their relative decentralization into medium-center areas but not significantly into small-center areas--except perhaps those nearest to large- or medium-center areas.

However, what are the prospects for continued growth of nationally slow-growing industries in small-center areas. These industries--such as textiles, apparel, food products, and furniture, lumber, and wood products, all of which are oriented to raw materials or inexpensive labor--largely account for the growth in small-center area economies between 1950 and 1960. An important question is whether these factors will continue to foster growth in slow-growing industries in the small-center areas. Data for 1960 on unemployment and low-income families suggest that the small-center areas still have a sizable reserve of low-wage labor that might be utilized by such industries. The future growth of nationally slow-growing industries in small-center areas therefore may rest on whether or not the extensive geographic shifts in these industries (mainly from north to south) have been completed. This study may only suggest that continued growth of fast-growing industries with their generally higher wage scales in the large-center areas of both Appalachia and the eastern United States may cause a continuing migration of industries such as textiles and apparel to the small-center areas. However, there may be a time when the relocation of slow-growth industries to small-center areas is completed. Then growth rates in these industries in small-center areas should taper off to the national average. It is also possible that other locations outside of Appalachia may become competitive with small-center areas in Appalachia for the slow-growing industries, and thus hinder future growth.

In closing, it should be stressed once again that the analysis and conclusions presented in this report are for the 79 areas of study grouped by size of center. There was considerable variation in most of the data among areas within the size groups. This means, of course, that even if the indicators of prospective growth have been wisely selected, certain areas within groups may be relatively better or worse off than the group average would suggest. To provide some indication of area differences within groups selected, data are presented in appendix table 24 on employment trends during 1950-60 and employment structures in 1960 for the 79 areas. Study of this table should lend additional perspective to the question of growth prospects among areas.

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APPENDIX

Methodology for the Delimitation of Appalachia into Areas

The Appalachian region was delimited into 79 areas for the analysis of changes in manufacturing activity during the 1950 decade. Two broad criteria guided the delimitation process and determined the specific methodology employed. First, it was desirable, since urban-rural differentials were important for analysis, to delineate subregions which would divide the region by degree of urban development. Second, the use of Census of Population employment data necessitated two arbitrary restrictions on the composition of subregions: (1) Since these employment data were available only on a county basis, the county became the basic building block for subregions, and (2) since the Census of Population employment data were given for the residence of worker rather than place of work, it was important to combine counties into areas to minimize labor commuting between areas. The net effect of these criteria was to produce areas composed of two or more contiguous counties centered on various sized urban places, and approximating the labor-commuting areas of their central urban places.

The delineation procedure was first to locate all urban "clusters"--an urban center plus all incorporated or unincorporated places with a population of 2,500 or over within 15 road miles of the urban center--with a population of 250,000 or over in 1950, and to circumscribe all counties with over half of their geographic area within approximately 50 road miles of these clusters. The contiguous counties delineated around such clusters were tentatively considered as the areas with urban centers of 250,000 or over. This procedure was then repeated for urban clusters of 100,000-249,999, 50,000-99,999, 25,000-49,999, and 10,000-24,999, in that order. This left a residual of counties located over 50 miles from an urban cluster of 10,000 or more. These residual counties were grouped into areas on the basis of their proximity to centers of less than 10,000 within their borders.

This procedure evolved a first approximation of a set of subareas. This first approximation was refined by relaxing somewhat the arbitrary maximum commuting radius of 50 miles. A map indicating the percentage commuting out of counties to work in 1960 (based on Census of Population data) was used to alter the county composition of areas when it appeared that the 50-mile rule had led to an unreasonable grouping of counties. The pattern of distribution of smaller urban centers around large centers also was utilized to modify the boundaries of areas.

Methodology for the Delimitation of Small-Center Areas into Geographic Groups

To add perspective to economic changes and potentials among the small-center (under 25,000) areas, it was desirable to divide them into groups based on their geographic location and economic structures. Location on the periphery or in the interior of the region was considered important for it distinguished areas on the basis of their accessibility to the urban agglomerations outside of Appalachia. The structure of total employment and the composition

of manufacturing industries among areas were also felt to be important since these factors seemed to be related to recent employment trends and prospects for future growth.

On the strength of these criteria, the 31 small-center areas were divided into four geographic groups:

(1) Northern periphery --includes four areas with centers of 10,000-24,999 in central Pennsylvania, oriented mainly to manufacturing and fast-growing industries within manufacturing.

(2) Central interior -- includes 13 areas in the mountainous core of West Virginia and eastern Kentucky, typically oriented to mining and to slow-growth manufacturing industries such as furniture, lumber, and wood products, and food products.

(3) Southeastern periphery -- includes six areas extending from western North Carolina to northern Georgia, oriented mainly to manufacturing and to textiles and furniture, lumber, and wood products within manufacturing.

(4) Southeastern periphery -- includes eight areas extending from the Ohio River to northwestern Alabama, oriented to manufacturing and agriculture and mainly to the apparel and furniture, lumber, and wood products industries within manufacturing.

The areas in each group are listed in table 23.

Table 22.--Central places, 1950 populations of central place clusters, and included counties, 79 areas delimited for study in Appalachia

Name of area	1950 population of central place cluster	Counties by State in area
	1,000	
Pittsburgh, Pa.	1,210.7	Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Indiana, Washington, Westmoreland (Pa.)
Cincinnati, Ohio-Ky.	740.5	Brown, Butler*, Clermont, Clinton*, Hamilton*, Highland, Warren* (Ohio); Boone*, Bracken*, Campbell*, Gallatin*, Grant*, Kenton*, Pendleton* (Ky.)
Columbus, Ohio	413.9	Delaware, Fairfield*, Fayette*, Franklin*, Hocking, Licking*, Madison*, Perry, Pickaway*, Ross, Union*, Vinton (Ohio)
Atlanta, Ga.	409.2	Butts*, Carroll, Cherokee, Clayton*, Cobb*, Coweta*, DeKalb*, Douglas, Fayette*, Forsyth, Fulton*, Gwinnett, Henry*, Newton*, Paulding, Pickens, Rockdale*, Spalding*, Walton* (Ga.)
Birmingham, Ala.	399.0	Blount, Cullman, Jefferson, St. Clair, Shelby, Walker (Ala.)
Youngstown, Ohio-Pa.	300.9	Columbiana*, Mahoning*, Trumbull*, (Ohio); Lawrence, Mercer (Pa.)
Scranton, Pa.	280.3	Columbia, Lackawanna, Luzerne, Wayne, Wyoming (Pa.)
Allentown-Bethlehem, Pa.	261.3	Carbon, Lehigh*, Monroe, Northampton*, Pike (Pa.)
Canton, Ohio	154.3	Carroll, Holmes, Stark*, Tuscarawas, Wayne* (Ohio)

*Counties with asterisk are not included in official Appalachia.

Table 22.--Central places, 1950 populations of central place clusters, and included counties, 79 areas delimited for study in Appalachia--continued

Name of area	1950 population of central place cluster	Counties by State in area
	1,000	
Harrisburg, Pa.	145.3	Cumberland*, Dauphin*, Perry (Pa.)
Chattanooga, Tenn.-Ga.	144.6	Catoosa, Dade, Murray, Walker, Whitfield (Ga.); Bledsoe, Bradley, Grundy, Hamilton, McMinn, Marion, Meigs, Polk, Rhea, Sequatchie (Tenn.)
Reading, Pa.	136.1	Berks*, Schuylkill (Pa.)
Erie, Pa.	134.2	Erie, Crawford (Pa.)
Knoxville, Tenn.	131.1	Anderson, Blount, Campbell, Cocke, Grainger, Hamblen, Jefferson, Knox, Loudon, Monroe, Morgan, Roane, Sevier, Union (Tenn.)
Huntington, W. Va.-Ohio-Ky.	126.4	Cabell, Lincoln, Mason, Wayne (W. Va.); Gallia, Lawrence (Ohio); Boyd, Carter, Elliot, Greenup, Lawrence (Ky.)
Binghamton, N. Y.-Pa.	120.0	Broome, Chenango, Tioga (N. Y.); Susquehanna (Pa.)
Wheeling, W. Va.-Ohio	115.2	Brooke, Hancock, Marshall (Ohio); Wetzel (W. Va.); Belmont, Harrison, Jefferson, Monroe (Ohio)
Charleston, W. Va.	113.2	Boone, Clay, Fayette, Jackson, Kanawha, Putnam, Roane (W. Va.)
Greenville, S. C.	111.3	Abbeville*, Anderson, Cherokee, Greenville, Laurens*, Oconee, Pickens, Spartanburg, Union* (S. C.)

*Counties with asterisk are not included in official Appalachia.

Table 22.--Central places, 1950 populations of central place clusters, and included counties, 79 areas delimited for study in Appalachia--continued

Name of area	1950 population of central place cluster	Counties by State in area
	1,000	
Montgomery, Ala.	110.9	Autauga*, Bullock*, Chilton, Coosa, Elmore, Lowndes*, Macon*, Montgomery*, Tallapoosa (Ala.)
Roanoke, Va.	102.4	Alleghany, Bedford*, Botetourt, Carroll, Craig, Floyd, Franklin*, Grayson, Montgomery*, Pulaski, Roanoke*, Roanoke City*, Wythe (Va.)
Johnstown, Pa.	96.3	Cambria, Somerset (Pa.)
Altoona, Pa.	94.7	Bedford, Blair, Huntingdon (Pa.)
Winston-Salem, N. C.	91.4	Davidson*, Davie, Forsyth, Stokes, Surrey, Yadkin (N. C.)
Lexington, Ky.	87.0	Bath, Bourbon*, Boyle*, Clark, Estill, Fayette*, Garrard, Harrison*, Jackson, Jessamine*, Lincoln, Madison, Mercer*, Montgomery, Nicholas*, Powell, Rockcastle, Robertson*, Scott*, Woodford* (Ky.)
Gadsden, Ala.	63.3	Cherokee, DeKalb, Etowah, Marshall (Ala.)
Parkersburg, W. Va.-Ohio	62.5	Pleasants, Ritchie, Tyler, Wirt, Wood (W. Va.); Athens, Meigs, Washington (Ohio)
Elmira, N. Y.-Pa.	62.2	Allegany, Chemung, Schuyler, Steuben, Tompkins (N. Y.); Bradford, Potter, Tioga (Pa.)
Williamsport, Pa.	60.4	Clinton, Lycoming, Montour, Northumberland, Snyder, Sullivan, Union (Pa.)

*Counties with asterisk are not included in official Appalachia.

Table 22.--Central places, 1950 populations of central place clusters, and included counties, 79 areas delimited for study in Appalachia--continued.

Name of area	1950 population of central place cluster	Counties by State in area
	1,000	
Asheville, N. C.	63.0	Buncombe, Haywood, Henderson, Jackson, McDowell, Madison, Mitchell, Polk, Rutherford, Transylvania, Yancy (N. C.)
Tuscaloosa, Ala.	50.3	Bibb, Fayette, Greene*, Hale*, Perry, Pickens*, Tuscaloosa (Ala.)
Hagerstown, Md.-Pa.-W. Va.-Va.	49.7	Franklin*, Fulton (Pa.); Washington (Md.); Berkeley, Jefferson, Morgan (W. Va.); Clarke*, Frederick* (Va.)
Jamestown, N. Y.-Pa.	49.7	Cattaraugus, Chautauqua (N. Y.); McKean, Warren (Pa.)
Cumberland, Md.-W. Va.	44.6	Allegany, Garrett (Md.); Hampshire, Mineral (W. Va.)
Portsmouth, Ohio-Ky.	44.2	Adams, Jackson, Pike, Scioto (Ohio); Lewis (Ky.)
Zanesville, Ohio	43.5	Coshocton, Guernsey, Morgan, Muskingum, Noble (Ohio)
Florence-Sheffield, Ala.-Tenn.	41.4	Colbert, Franklin, Lauderdale, Lawrence (Ala.); Lawrence*, Wayne* (Tenn.)
Anniston, Ala.	39.0	Calhoun, Clay, Cleburne, Talladega (Ala.)
Johnson City, Tenn.	38.6	Carter, Greene, Unicoi, Washington (Tenn.)

*Counties with asterisk are not included in official Appalachia.

Table 22.--Central places, 1950 populations of central place clusters, and included counties, 79 areas delimited for study in Appalachia--continued

Name of area	1950 population of central place cluster	Counties by State in area
	1,000	
Clarksburg, W. Va.	37.4	Barbour, Doddridge, Harrison, Lewis, Marion, Monongalia, Preston, Taylor, Upshur (W. Va.)
Bristol, Va.-Tenn.	37.4	Hawkins, Johson, Sullivan (Tenn.); Russell, Scott, Smyth, Washington (Va.)
Oil City-Franklin, Pa.	36.7	Clarion, Forest, Venango (Pa.)
Bluefield, W. Va.-Va.	33.9	McDowell, Mercer, Monroe, Summers (W. Va.); Bland, Giles, Tazewell (Va.)
Rome, Ga.	32.8	Bartow, Chattooga, Floyd, Gordon, Haralson, Polk (Ga.)
Staunton, Waynesboro, Va.	32.3	Augusta*, Bath, Highland, Rockbridge*, Rockingham* (Va.)
Huntsville, Ala.-Tenn.	32.1	Jackson, Limestone, Madison (Ala.); Giles*, Lincoln* (Tenn.)
LaGrange, Ga.-Ala.	28.8	Chambers, Randolph (Ala.); Heard, Troup* (Ga.)
Athens, Ga.	28.2	Barrow, Clarke*, Greene*, Jackson, Madison, Morgan*, Oconee*, Oglethorpe* (Ga.)
State College, Pa.	22.0	Centre (Pa.)
Hickory-Statesville, N. C.	20.8	Alexander, Avery, Burke, Cladwell, Catawba*, Iredell*, Watauga, Wilke (N. C.)
St. Mary's, Pa.	18.7	Cameron, Elk (Pa.)

*Counties with asterisk are not included in official Appalachia.

Table 22.--Central places, 1950 populations of central place clusters, and included counties, 79 areas delimited for study in Appalachia--continued

Name of area	1950 population of central place cluster	Counties by State in area
	1,000	
Middlesboro, Ky.-Va.-Tenn.	18.4	Bell, Harlan, Knox, Laurel, Whitley (Ky.); Lee (Va.); Claiborne, Hancock (Tenn.)
DuBois, Pa.	17.7	Clearfield, Jefferson (Pa.)
Lewistown, Pa.	16.8	Juniata, Mifflin (Pa.)
Logan, W. Va.	15.3	Logan, Mingo (W. Va.)
Norton, Va.-Ky.	12.4	Letcher (Ky.); Dickenson, Wise (Va.)
Beckley, W. Va.	12.0	Raleigh, Wyoming (W. Va.)
Gainesville, Ga.	11.9	Banks, Dawson, Franklin, Habersham, Hall, Lumpkin, Stephens, White (Ga.)
Elkins, W. Va.	9.1	Pendleton, Randolph, Tucker (W. Va.)
Maysville, Ky.	8.6	Fleming, Mason*, Rowan (Ky.)
Paintsville, Ky.	7.9	Floyd, Johnson, Magoffin, Martin, Morgan (Ky.)
Tullahoma, Tenn.	7.6	Coffee, Franklin (Tenn.)
McMinnville, Tenn.	7.6	DeKalb, Van Buren, Warren (Tenn.)
Somerset, Ky.	7.1	Adair, Casey, McCreary, Pulaski, Russell, Wayne (Ky.)
Hazard, Ky.	7.0	Breathitt, Knott, Leslie, Perry (Ky.)

*Counties with asterisk are not included in official Appalachia.

Table 22.--Central places, 1950 populations of central place clusters, and included counties, 79 areas delimited for study in Appalachia--continued

Name of area	1950 population of central place cluster	Counties by State in area
	1,000	
Cookeville, Tenn.	6.9	Clay, Cumberland, Jackson, Macon, Overton, Putnam, Smith, White (Tenn.)
Richwood, W. Va.	5.3	Greenbrier, Nicholas, Pocahontas, Webster (W. Va.)
Pikeville, Ky.-Va.	5.2	Pike (Ky.); Buchanan (Va.)
Haleyville, Ala.	3.3	Marion, Winston (Ala.)
Murphy, N. C.	2.4	Cherokee, Clay, Graham (N. C.)
McCaysville, Ga.	2.1	Fannin, Gilmer, Towns, Union (Ga.)
Jamestown, Tenn.	2.1	Fentress, Pickett, Scott (Tenn.)
Franklin, N. C.-Ga.	2.0	Macon, Swain (N. C.); Rabun (Ga.)
Petersburg, W. Va.	1.9	Grant, Hardy (W. Va.)
Tomkinsville, Ky.	1.9	Clinton, Cumberland, Monroe (Ky.)
Manchester, Ky.	1.9	Clay, Owsley (Ky.)
Glennville, W. Va.	1.8	Braxton, Calhoun, Gilmore (W. Va.)
Beattyville, Ky.	1.0	Lee, Menifee, Wolfe (Ky.)
West Jefferson, N. C.	0.8	Alleghany, Ashe (N. C.)

*Counties with asterisk are not included in official Appalachia.

Table 23.--Name, State location, and 1950 population of centers of areas, four geographic groups of small-center areas in Appalachia

Northern periphery	Population	Central interior	Population
	1,000		1,000
St. Mary's, Pa.	18.7	Petersburg, W. Va.	1.9
DuBois, Pa.	17.7	Elkins, W. Va.	9.1
State College, Pa.	22.9	Glennville, W. Va.	1.8
Lewistown, Pa.	16.8	Richwood, W. Va.	5.3
		Logan, W. Va.	15.3
		Beckley, W. Va.	12.0
		Pikeville, Ky.	5.2
		Paintsville, Ky.	7.9
		Beattyville, Ky.	1.0
		Hazard, Ky.	7.0
		Manchester, Ky.	1.9
		Norton, Va.	12.4
		Middlesboro, Ky.	18.4

Southeastern periphery	Population	Southwestern periphery	Population
	1,000		1,000
West Jefferson, N. C.	0.8	Maysville, Ky.	8.6
Hickory-Statesville, N. C.	20.8	Somerset, Ky.	7.1
Franklin, N. C.	2.0	Tomkinsville, Ky.	1.9
Murphy, N. C.	2.4	Jamestown, Tenn.	2.1
McCaysville, Ga.	2.1	Cookeville, Tenn.	6.9
Gainesville, Ga.	11.9	McMinnville, Tenn.	7.6
		Tullahoma, Tenn.	7.6
		Haleyville, Ala.	3.3

Table 24.--Selected economic data for 79 areas of Appalachia, 1950-60

Size and name of area center	Employment change, 1950-60		Unemployment 1960	Percent of total employment in 1960		Change in number employed in manufacturing, 1950-60 1/		Percent of total manufacturing employment in 7 fast-growing industries, 1960 1/
	Total	Manufacturing		Agriculture and mining	Manufacturing	7 fast-growing industries	7 slow-growing industries	
	Percent	Percent	Percent	Percent	Percent	Number	Number	Percent
250,000 and over:								
Pittsburgh, Pa.	1.5	2.8	7.5	4.1	35.9	21,376	-11,956	43.9
Cincinnati, Ohio	16.6	20.9	4.8	3.3	34.3	30,559	2,896	58.1
Columbus, Ohio	22.4	40.4	4.8	5.1	28.5	26,426	6,118	67.0
Atlanta, Ga.	28.9	41.9	3.6	2.7	25.6	26,877	10,196	36.6
Birmingham, Ala.	4.3	18.0	6.3	6.8	26.8	10,722	427	34.7
Youngstown, Ohio	7.3	0.0	6.5	3.1	44.6	1,078	-1,197	41.9
Scranton, Pa.	-8.9	15.6	9.1	6.7	36.5	12,215	-335	31.5
Allentown-Bethlehem, Pa.	6.5	7.4	4.8	2.5	47.4	10,099	-3,187	33.4
100,000-249,999								
Canton, Ohio	10.8	10.4	5.5	6.4	41.2	4,914	2,429	54.8
Harrisburg, Pa.	14.0	14.8	3.4	3.6	23.6	4,723	-339	29.3
Chattanooga, Tenn.	12.3	20.4	5.5	6.0	37.3	7,554	3,961	33.7
Reading, Pa.	-4.4	4.6	7.0	6.5	43.4	6,024	-2,610	29.3
Erie, Pa.	0.3	10.3	8.2	4.4	39.6	-6,288	2,291	63.9
Knoxville, Tenn.	10.5	36.7	6.1	9.0	31.3	11,542	5,840	40.7
Huntington, W. Va.	-2.8	22.2	8.6	7.9	27.4	2,399	3,328	39.2
Binghamton, N. Y.	11.4	19.6	4.4	6.2	41.8	14,022	5,467	60.0
Wheeling, W. Va.	-6.9	-1.6	7.5	8.3	37.1	-127	-679	32.3
Charleston, W. Va.	-9.3	13.7	7.6	11.0	25.7	2,900	866	75.8
Greenville, S. C.	-10.3	20.2	3.7	5.1	44.4	10,289	9,622	12.9
Montgomery, Ala.	-1.8	11.1	4.8	11.4	19.7	1,929	315	21.6
Roanoke, Va.	3.1	23.7	5.4	9.3	29.4	4,111	3,564	30.1
50,000-99,999:								
Johnstown, Pa.	-8.4	19.2	10.4	11.4	33.0	2,418	2,075	19.1
Altoona, Pa.	-1.3	38.7	6.4	6.4	24.6	2,418	2,488	37.6
Winston-Salem, N. C.	23.0	33.8	3.8	9.2	42.8	7,129	9,297	17.6

1/ Refers to nationally fast- and slow-growing industries.

Table 24.--Selected economic data for 79 areas of Appalachia, 1950-60--continued

Size and name of area center	Employment change, 1950-60		Unemployment 1960	Percent of total employment in 1960		Change in number employed in manufacturing, 1950-60 1/		Percent of total manufacturing employment in 7 fast-growing industries, 1960 1/
	Total	Manufacturing		Agriculture and mining	Manufacturing	7 fast-growing industries	7 slow-growing industries	
	Percent	Percent	Percent	Percent	Percent	Number	Number	Percent
Lexington, Ky.	9.9	115.9	4.7	20.3	15.7	8,154	3,504	51.0
Gadsden, Ala.	-4.8	6.5	7.0	14.3	31.6	2,247	-994	17.1
Parkersburg, W. Va.	6.8	40.0	6.5	8.9	28.2	3,759	2,166	64.9
Elmira, N. Y.	7.4	17.6	5.3	9.4	32.5	8,318	-876	73.2
Williamsport, Pa.	-0.5	10.4	7.2	7.3	39.3	4,324	-16	36.5
Asheville, N. C.	3.4	28.4	4.8	9.6	35.6	5,246	4,831	21.6
Tuscaloosa, Ala.	1.1	38.4	4.7	14.8	25.3	1,447	2,863	14.7
25,000-49,999:								
Hagerstown, Md.	11.2	11.4	6.9	10.5	27.7	2,860	170	49.5
Jamestown, N. Y.	-0.3	6.0	6.1	7.8	37.9	3,236	-706	52.7
Cumberland, Md.	-2.8	7.8	7.3	8.5	29.4	41	897	43.4
Portsmouth, Ohio	-3.2	11.3	9.0	11.6	31.1	2,385	-873	30.7
Zanesville, Ohio	-5.2	5.5	7.7	11.5	32.7	-1,463	2,458	62.6
Florence-Sheffield, Ala.	1.1	66.3	6.2	14.4	28.9	3,715	3,117	36.6
Anniston, Ala.	7.4	6.3	6.2	5.6	35.6	3,212	-1,943	22.6
Johnson City, Tenn.	0.2	12.9	8.3	14.8	28.3	1,627	87	57.4
Clarksburg, W. Va.	-15.0	-4.2	8.0	18.4	19.6	-571	-204	72.7
Bristol, Tenn.	7.7	23.9	5.4	16.1	31.4	6,217	-522	61.8
Oil City-Franklin, Pa.	1.6	22.3	6.6	9.1	36.1	1,960	299	67.1
Bluefield, W. Va.	-26.6	7.3	9.8	26.2	14.0	346	227	49.3
Roane, Ga.	3.6	8.2	5.4	7.2	42.0	3,642	2,134	19.7
Staunton-Waynesboro, Va.	11.4	20.1	3.7	12.4	30.9	3,268	648	40.7
Huntsville, Ala.	23.1	148.7	4.6	15.4	30.3	15,813	1,937	60.3
LaGrange, Ga.	-8.7	0.5	3.9	6.6	48.7	105	19	2.8
Athens, Ga.	0.7	33.0	3.3	11.9	29.3	1,590	1,888	16.0
10,000-24,999:								
State College, Pa.	20.5	32.5	4.4	8.0	18.1	1,049	131	49.2
Hickory-Statesville, N. C.	16.6	31.9	4.0	7.1	48.0	3,684	14,465	10.4

1/ Refers to nationally fast- and slow-growing industries.

Table 24.--Selected economic data for 79 areas of Appalachia, 1950-60--continued

Size and name of area center	Employment change, 1950-60		Unemployment 1960	Percent of total employment in 1960		Change in number employed in manufacturing, 1950-60 1/		Percent of total manufacturing employment in 7 fast-growing industries, 1960 1/
	Total	Manufacturing		Agriculture and mining	Manufacturing	7 fast-growing industries	7 slow-growing industries	
	Percent	Percent	Percent	Percent	Percent	Number	Number	Percent
St. Mary's, Pa.	-7.0	13.9	10.7	3.8	52.3	-884	-403	75.6
Middlesboro, Ky.	-32.9	2.2	9.3	32.8	9.6	389	-288	21.4
Dubois, Pa.	-5.6	13.4	10.2	12.8	29.5	873	550	64.5
Lewistown, Pa.	5.8	5.7	5.2	10.8	38.2	418	41	49.7
Logan, W. Va.	-38.2	9.8	12.2	38.5	5.8	214	-104	26.4
Norton, Va.	-29.8	3.2	9.9	43.6	5.1	97	-65	25.2
Beckley, W. Va.	-29.6	11.6	12.5	32.1	8.3	427	-200	42.9
Gainesville, Ga.	15.1	47.4	5.0	11.5	39.4	1,108	4,464	13.3
Under 10,000:								
Elkins, W. Va.	-18.3	15.4	9.3	20.7	20.1	115	198	12.0
Maysville, Ky.	-4.8	34.7	5.6	26.4	19.6	476	208	48.6
Paintsville, Ky.	-36.9	25.7	12.6	39.4	5.1	113	79	27.7
Tullahoma, Tenn.	17.3	41.9	5.4	14.0	22.6	801	422	32.6
McMinnville, Tenn.	5.1	71.0	5.0	23.9	31.1	238	478	11.1
Somerset, Ky.	-19.7	37.9	5.3	38.5	15.0	285	843	13.6
Hazard, Ky.	-43.7	-38.2	10.3	36.9	6.5	7	-559	11.8
Cookeville, Tenn.	-0.9	95.4	5.6	28.0	25.9	578	4,349	10.7
Richwood, W. Va.	-22.3	10.7	9.3	26.9	14.1	127	-496	13.6
Pikesville, Ky.	-22.0	-3.8	11.3	45.9	5.3	14	-60	13.3
Haleyville, Ala.	-16.1	72.3	6.3	22.1	29.8	131	1,255	7.1
Murphy, N. C.	-16.0	48.3	7.4	22.3	24.6	17	559	6.7
McCaysville, Ga.	-13.8	1.7	5.2	26.9	26.9	28	15	13.2
Jamestown, Tenn.	-8.2	63.1	8.1	22.2	34.7	59	1,050	3.7
Franklin, N. C.	-4.6	74.8	7.4	14.7	26.8	33	996	6.3
Petersburg, W. Va.	-11.6	39.3	7.1	29.7	19.1	79	201	13.2
Thomkinsville, Ky.	-11.7	59.6	5.1	46.7	12.8	25	412	6.3
Manchester, Ky.	-39.5	-21.9	10.5	50.4	6.6	4	-94	15.5
Glennville, W. Va.	-29.7	44.0	11.0	31.4	12.2	-82	361	17.9
Beattyville, Ky.	-29.2	31.0	6.3	47.2	8.5	10	69	12.0
West Jefferson, N. C.	-5.8	212.5	5.5	32.1	32.2	766	1,974	29.9

Sources: (8, 9, 10).

1/ Refers to nationally fast- and slow-growing industries.

* U. S. GOVERNMENT PRINTING OFFICE : 1968 O - 302-073 (ERS-64)